SECTION A: INTRODUCTION

SECTION SYNOPSIS

This section comprises the following:

a) Background information pertaining to the planning process.
b) The terms of reference.
c) Key aspects of a Spatial Development Framework, including its definition, legal status, purposes and key elements.
d) Summary of planning principles and core values that form the basis of the document.

1 BACKGROUND

The //Khara Hais[1] Municipality (further also referred to as the Municipality or //Khara Hais) approved and implemented the **//Khara Hais Spatial Development Framework (//Khara Hais SDF)** in 2010 as an integral part of the //Khara Hais Integrated Development Plan (IDP). The original //Khara Hais SDF was applicable for a 5-year period commencing on 1 January 2010. However, the //Khara Hais Council in 2011 commissioned the revision of the the SDF, the primary reasons being to:

a) Remain aligned with the relevant statutes and policy, with specific reference to the Northern Cape Planning and Development Act 7 of 1998, the Spatial Planning and Land-use Management Bill and, in particular, the draft Northern Cape Provincial Spatial Development Framework (Northern Cape PSDF).
b) Provide for the growing development needs and requirements of //Khara Hais.
c) Accommodate the additional governance responsibilities created by the re-demarcation of the municipal boundaries.
d) Facilitate continual improvement of the SDF and the associated implementation and governance strategies.

This revised SDF will be applicable for the 5-year period of August 2012 - July 2017, or until the //Khara Hais Council deems it necessary to amend the SDF.

1.1 TERMS OF REFERENCE

The overarching objectives of the SDF, as stipulated by the Municipality, is to facilitate sustainable development (i.e. a balanced relationship between *economic efficiency*, *human well-being* and *environmental integrity*) throughout the area of jurisdiction and to ensure integration of development processes.

A key requirement was that the SDF must be aligned with all relevant national, provincial, regional and SDFs of neighbouring municipalities. The main purpose in this regard was to promote social, economic, and environmental sustainability in an integrated and holistic manner and in accordance with the applicable legislation, policy and protocols. Subsequently the SDF has to create conditions that facilitate economic benefit through the promotion of the comparative and competitive economic advantages of the Municipality. The SDF stipulates puts forward strategies

[1] In the Nama language *//Khara Hais* means '*the place of trees*' or '*the place of the big tree*'. This, apparently, refers to a large tree under which Koranna-leader Klaas Lucas had his kraal.

to achieve this objective.

The terms of reference include the following key components together with all other matters related thereto:

a) Consultation with all stakeholders, the objective being to obtain the endorsement of the SDF by such stakeholders.

b) Revision of the 2010 //Khara Hais SDF, the purpose of which includes the following:
   (i) Refining the land use approach adopted by the Municipality in terms of the original SDF which gives effect to a 'developmental state' as promulgated by *inter alia* the South African Constitution and the draft Northern Cape PSDF.
   (ii) Aligning the SDF with the Spatial Planning and Land Use Management Bill.
   (iii) Enhancing the integrity of the environment.
   (iv) Ensuring a balance between employment growth and transportation accessibility, by locating residents close to employment opportunities and concentrating employment opportunities in areas well served by transportation.
   (v) Ensuring that the Municipality functions in compliance with the Northern Cape Provincial Growth and Development Strategy and the National Spatial Development Perspective.
   (vi) Ensuring the sustainable use of natural resources, including high-potential agriculture land and renewable energy.
   (vii) Establishing directions of growth within the Municipality.
   (viii) Identifying areas for future housing settlements throughout the Municipality.
   (ix) Identifying locations within the Municipality for economic activities as well as the types of development to be located within these areas.
   (x) Optimizing infrastructure investment spending within the Municipality.
   (xi) Promoting economic growth through public/private/community partnerships.
   (xii) Promoting the adoption of bioregional planning principles throughout the Municipality.
   (xiii) Promoting the formulation and implementation of municipal strategies to promote sustainable development.
   (xiv) Promoting the use of low-potential agricultural land in a manner that supports socio-economic growth and environmental rehabilitation.
   (xv) Promoting tourism as a viable economic sector.
   (xvi) Providing strategic, indicative and flexible forward planning guidelines to direct planning and decisions on land development within the Municipality.
   (xvii) Restoring and protecting the cultural heritage.

1.1.1 FOCAL POINTS

Specific attention is given in the revised SDF to the updating of the:

a) Vacant Land Analysis.
b) Strategies and control measures for rural (peri-urban) development.
c) Detail development strategy for the development of the river banks in Upington.
d) Guidelines on the decentralisation of CBD functions of Upington town.

1.1.2 KEY OUTCOMES OF THE SDF

The SDF aims to contribute towards the achievement of sustainable development. It therefore addresses the challenge to balance the 'triple bottom line' imperatives of economic efficiency,

human well-being and environmental integrity. In addition, the SDF facilitates the following:

a) Broadening of the economic base**:** An important development principle underlying economic development is to broaden the economic base of the Municipality. Apart from a general higher level of output, this also implies the following:
   - Introducing new activities, which are not currently operational in the area. This means an extension of the production capacity in terms of new products and services.
   - Development of small, medium and micro-enterprises (SMMEs) to have a broader representation base on the size of establishments. Size can be expressed in terms of either employment or production.
   - Broadening of ownership to include all members of the community.
   - Protecting and enhancing the interest of all property owners in the Municipality.

b) Adoption of integrated and holistic planning: An integrated and holistic approach to the development planning process within the Municipality is of paramount importance. This implies that the interrelationships between economic activities and other development dimensions such as the social, demographic, institutional, infrastructural, financial and environmental aspects should be carefully considered.

In order to achieve the above, the SDF:

(i) includes an achievable vision of a 'developmental state';
(ii) provides a credible context for public investments in the coming years and promotes the development of areas that have lagged behind;
(iii) replaces existing policy frameworks with a more ambitious forward moving, integrated approach to planning that will lead to the realisation of common goals and mutual advantages within the Municipality;
(iv) provides clarity to guide decision-makers in respect of development applications within the Municipality; and,
(v) describes the existing and desired future spatial patterns that provide for integrated, efficient and sustainable settlements throughout the Municipality.

1.2 STRUCTURE AND CONTENT OF THE SDF

The SDF consists of three volumes as illustrated by the figure below.

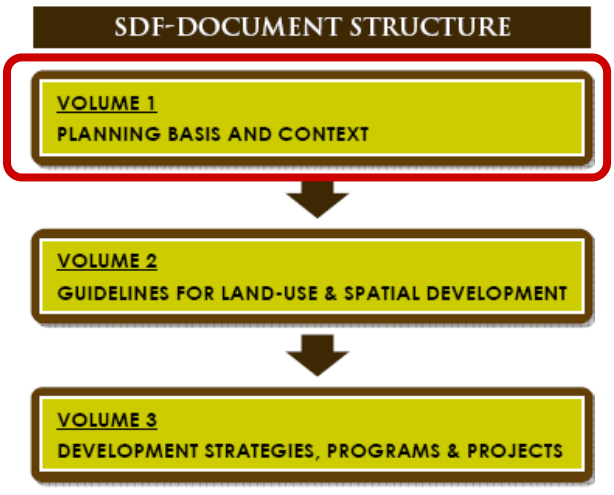


Figure 1: Volumes of the //Khara Hais SDF.

The key aspects that emerged from the *Environmental Scan and Analysis* described in Section B of this document, the stakeholder consultation undertaken as part of the SDF planning process, and the //Khara Hais IDP were addressed in Volume 2 and Volume 3.

Although an SDF, per definition, essentially addresses the **spatial** implications of the IDP, it is recognised that holistic governance and management of any area (as is contemplated for //Khara Hais) also requires the implementation of strategies that do not have any spatial implications. Subsequently, the key aspects referred to above were divided into two distinct groups, namely:

- **Aspects with Spatial Implications**: Most of these were addressed in **Volume 2** in the form of plans and related guidelines that are to guide the future development of //Khara Hais.
- **Aspects with No Spatial Implications**: These aspects will not have spatial implications but could have an impact on sustainable development. They were addressed in **Volume 3** in the form of strategies, programs and projects to be undertaken in terms of dedicated principles, guidelines and criteria that comply with the requirement for sustainable development listed in Chapters 15 and 16 of this Volume.

1.2.1 STRUCTURE OF VOLUME 1

In addition to this introductory section (Section A), Volume 1 (this document) comprises 5 further sections, the contents and functions of which are summarised in the figure below.

Figure 2: Structure of Volume 1.

2 KEY ASPECTS OF THE SPATIAL DEVELOPMENT FRAMEWORK

2.1 DEFINITION AND STATUS

The Municipal Systems Act 32 of 2000 makes provision for the drafting of an *Integrated Development Plan* (IDP) for holistic forward planning of development in defined areas of jurisdiction. The Act also requires municipalities to prepare a *Spatial Development Framework* (SDF) as a core component of the IDP. (In the past, various plans such as guide plans, structure plans, spatial plans, etc. were prepared. Presently there is one mutually-accepted definition and general format, namely a Spatial Development Framework).

An SDF does not grant any rights pertaining to land use, nor take any rights away. However, being an integral part of the IDP, the SDF will be formally approved by the Municipality. Such approval in accordance with the applicable legislation grants significant status to the document (Binns-Ward 2005)[2].

2.2 PURPOSE OF THE SDF

According to Section 16(1) of the Spatial Planning Land Use Management Bill a *'Spatial Development Framework must be included in a Municipality's IDP and must be consistent with and give effect to the following:*

- *The Directive Principles.*
- *Any national land use framework applicable in the area of the Municipality.*
- *Any national and provincial plans and planning legislation'.*

The SDF has the following broad functions and characteristics:

- It expresses government policy and the views and aspirations of all I&APs.
- Government departments, and other authorities and institutions involved in future development and land use planning in the Municipality, will be bound by the SDF proposals.

[2] Binns-Ward, A.G. November 2005: ex parte: Lagoon Bay Lifestyle Estate (Pty) Ltd & Mr M.E. Botha. ***Appropriate consideration of development applications: The status of draft policies, guidelines and development frameworks***

In *MEC for Agriculture, Conservation, Environment & Land Affairs v Sasol Oil (Pty) Limited and Another*, the Supreme Court of Appeal observed '*The adoption of policy guidelines by state organs to assist decision makers in the exercise of their discretionary powers has long been accepted as legally permissible and eminently sensible. This is particularly so where the decision is a complex one requiring the balancing of a range of competing interests or considerations, as well as specific expertise on the part of a decision-maker. A court should in these circumstances give due weight to the policy decisions and findings of fact of such a decision-maker. Once it is established that the policy is compatible with the enabling legislation the only limitation to its application in a particular case is that it must not be applied rigidly and inflexibly, and that those affected by it should be aware of it. An affected party would then have to demonstrate that there is something exceptional in his or her case that warrants a departure from the policy.*'

A relevant policy, guideline or framework can only be useful and effective to the extent that it serves or facilitates the implementation of the principles of integrated environmental management. It is incumbent on administrative authorities to be astute to the fact that such documents whether in draft, or as adopted, do not relieve the functionaries involved of the duty of assessing any application on its merits and in terms of the governing statutes. The application of any policy or guideline in decision-making must obviously comply with the provisions of s 33 of the Constitution and the Promotion of Administrative Justice Act 3 of 2000 (PAJA).

- It provides certainty to the affected communities regarding future socio-economic and spatial development in the area.
- It provides a basis for co-ordinated decision-making and policy formulation related to future land use.
- It creates opportunities for preparing development and action plans to which financial budgets can be linked.

Section 26(e) of the Municipal Systems Act 32 of 2000 requires that an SDF should include basic guidelines for a land use management system. Section 2(4) of the Local Government: Municipal Planning and Performance Management Regulations, 2001 (GN R796) specifies that a SDF reflected in a Municipality's IDP must –

(a) give effect to the principles contained in Chapter 1 of the Development Facilitation Act 67 of 1995;
(b) set out objectives that reflect the desired spatial form of the Municipality;
(c) contain strategies and policies regarding the manner in which to achieve the objectives referred to in paragraph (b), which strategies and policies must-
    (i) indicate desired patterns of land use within the Municipality;
    (ii) address the spatial reconstruction of the Municipality; and
    (iii) provide strategic guidance in respect of the location and nature of development within the Municipality;
(d) set out basic guidelines for a land use management system in the Municipality;
(e) set out a capital investment framework for the Municipality's development programs;
(f) contain a strategic assessment of the environmental impact of the spatial development framework;
(g) identify programs and projects for the development of land within the Municipality;
(h) be aligned with the spatial development frameworks reflected in the integrated development plans of neighbouring municipalities; and
(i) provide a visual representation of the desired spatial form of the Municipality, which representation-
    (i) must indicate where public and private land development and infrastructure investment should take place;
    (ii) must indicate desired or undesired utilisation of space in a particular area;
    (iii) may delineate the urban edge;
    (iv) must identify areas where strategic intervention is required; and
    (v) must indicate areas where priority spending is required.

2.3 SPECIFIC FUNCTIONS OF THE //KHARA HAIS SDF

The //Khara Hais SDF puts forward goals and objectives, strategies, programs and projects for the spatial and administrative planning and management of the key issues that have been identified by the IDP and applicable lower sphere planning frameworks. As such, the SDF indicates **which** type of development should be allowed in the Municipality, **where** it should take place, and **how** such development should be undertaken. The //Khara Hais SDF includes plans and guidelines regarding the following key aspects:

a) Restructuring urban development so as to utilise and incorporate the banks of the Gariep River[3] into the urban environment.

[3] Formerly known as the Orange River. Contrary to popular belief, the Orange River was not named after the reddish orange colour of its silt-laden water. It was in fact named in 1779 by Colonel Robert Gordon, the commander of the garrison of the

b) Utilising and unlocking the latent value of vacant municipal land through an innovative partnership approach to property development with the objective to support LED in a lasting and meaningful manner.
c) Enhance the quality of development throughout the Municipality in accordance with the site-specific planning and design criteria and guidelines.

In order to comply with the above requirement, the SDF was based on the bioregional planning approach as advocated by the Northern Cape PSDF (refer to Chapter 14.1.1). For the record, it is noted that the //Khara Hais SDF was prepared prior to the latter, and that it, in many respects, provided practical examples and/or case studies that informed the policies and guidelines put forward in the PSDF.

2.4 FUNDAMENTAL PRINCIPLES OF THE //KHARA HAIS SDF

The SDF is based on fundamental principles derived from applicable government policy and legislation such as the National Environmental Management Act 107 of 1998 (NEMA). These principles will also guide the implementation of the SDF and future decision-making related to development and land-use.

a) Capacity building and education: All people of the Municipality must have the opportunity to develop the understanding, skills and capacity for effective participation in achieving sustainable development.
b) Consider all alternatives: Considering all possibilities and results in decision-making. Development and environmental planning, problem solving and decision-making are often complex. Possible consequences of conflicting interest, as well as the consequences of not acting need careful consideration.
c) Co-ordination: Various concerns and issues cut across the key sectors and functions in the Municipality. Therefore, sustainability, integrated planning and management depend on co-ordination and integration of all sectors of society.
d) Due process: Due process must be applied in all integrated management activities. This includes adherence to the provisions in the statutes dealing with just administration and public participation in regional and local governance.
e) Duty of care: Every person or organisation has a duty to act with due care to avoid damage to others, or to the environment. This is referred to as the Environmental Responsibility Principle.
f) Equity: There should be equitable access to natural resources, benefits and services to meet basic needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure their well-being.
g) Environmental justice: To comply with the requirements of environmental justice, the SDF must integrate environmental considerations with social, political, and economic justice in addressing the needs and rights of all communities, sectors and individuals.
h) Good governance: Good governance depends on mutual trust and reciprocal relations between the various groups and sectors of the Municipality. This must be based on the fulfilment of constitutional, legislative and executive obligations, and the maintenance of transparency and accountability.
i) Inclusivity: Integrated management processes must consider the interests, needs and values of all I&APs in decision-making to ensure sustainable development.

Dutch East India Company (Cape Town) during a reconnaissance into the interior, in honour of the Dutch House of Orange. The name 'Gariep' is a Nama or Koranna name that means 'the river' or 'our river' or 'the great river'. (Earle *et al*, 2005).

j) Using traditional knowledge: This includes recognising all forms of knowledge, including traditional and ordinary knowledge.
k) Precaution: The SDF promotes a risk averse and cautious approach that recognises the limits of current knowledge regarding the consequences of decisions or actions.
l) Waste management: Waste management must minimise and avoid the creation of waste at the source. The SDF must encourage waste recycling, separation at source and safe disposal of unavoidable waste.

2.5 STAKEHOLDER CONSULTATION AND ENDORSEMENT

The revision of the SDF included the following:
a) The intention to revise the SDF was duly advertised in the local media and in municipal communiqués.
b) Progress and information pertaining to public participation were communicated through the same channels.
c) A consultative draft report was prepared and made available for public scrutiny and comment. All comments received were addressed in the final revised report.

The above steps follow on the extended public participation undertaken as part of the preparation of the original report. The original process included the following:
(i) Adverts in the local media and in municipal communiqués.
(ii) A series of publications in the local media and in municipal communiqués.
(iii) A total of eight meetings with the general public.
(iv) Separate meetings with seven registered interest groups.
(v) Making available three draft reports for public scrutiny and responding accordingly.

It is concluded that all stakeholders associated with, or affected by, land use management and social, economic, and environmental affairs in //Khara Hais Municipality had been given adequate opportunities to participate in the revision of the SDF and that the latter is a true reflection of the input received during the revision period that ended in May 2012.

SECTION B: ENVIRONMENTAL SCAN AND ANALYSIS

SECTION SYNOPSIS

This section provides a description and overview of the key aspects and characteristics of the //Khara Hais Municipality that were addressed in the SDF, including:

a) The existing local government structures of the Municipality as determined by the Local Government Municipal Demarcation Act 27 of 1998.
b) The historic, ecological, biophysical and socio-economic characteristics, which collectively shape the cultural and natural landscapes of the Municipality and represent its *intrinsic, systemic* and *instrumental* values.

3 CONTEXT

The //Khara Hais Municipality is located in the Northern Cape Province (refer to the figure below). As mentioned previously, in the Nama language *//Khara Hais* means '*the place of trees*' or '*the place of the big tree*'. This, apparently, refers to a large tree under which Koranna-leader Klaas Lucas had his kraal.

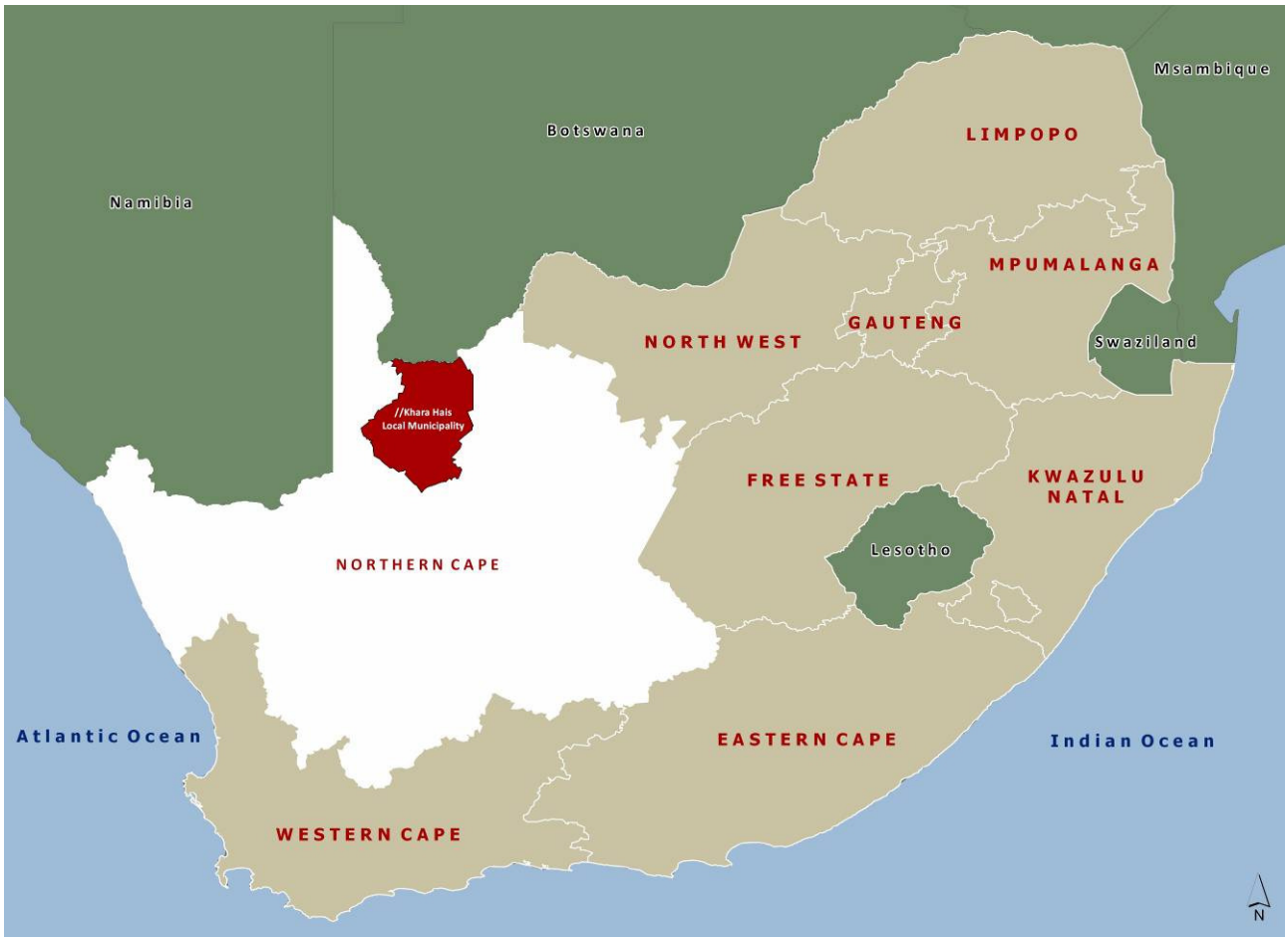


Figure 3: //Khara Hais Municipality in national context.

Upington is the main town of the //Khara Hais Municipality and has, since its inception, been the hub of activities in the region. In the minds of the broad South African community Upington fits a number of broad descriptions and perceptions, including:

- 'Portal' to Namibia and *vice versa*.
- 'Frontier' to the Kalahari and the Kgalagadi Trans-frontier Park.
- 'Oasis in the desert'.
- Agricultural hub of the Northern Cape.
- Portal to the Kalahari's hunting grounds.

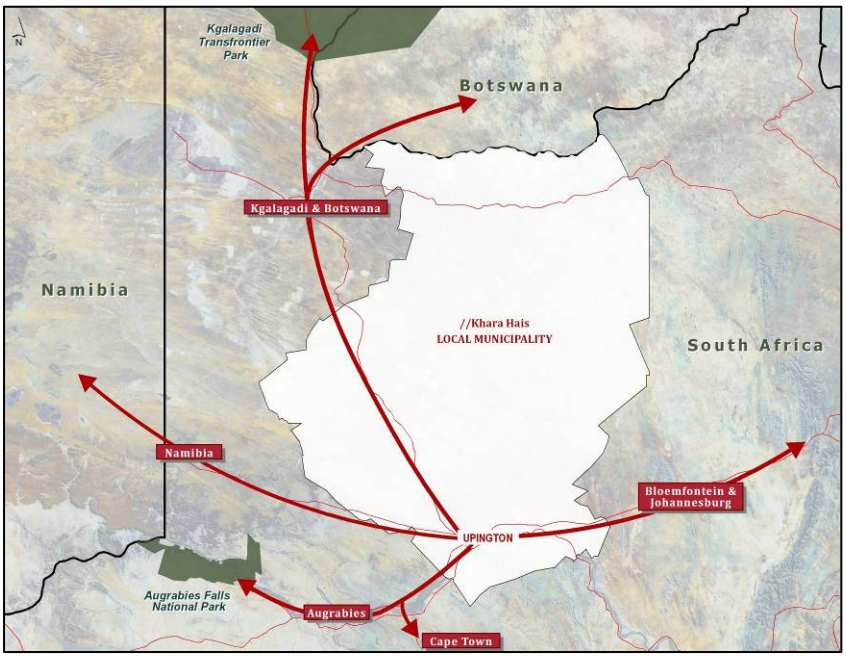


Figure 4: //Khara Hais and Upington as a regional hub.

3.1 MUNICIPAL STRUCTURES

//Khara Hais is a Local (Category B) Municipality (NC083) and is located in the Siyanda District Municipality (DC8). The Siyanda District Municipality is the second largest district (approximately 103 871 km^2) in the Northern Cape. The boundaries of the Municipality were re-demarcated in 2011. No dedicated process was followed to assess the desirability of such re-demarcation.

Figure 5: //Khara Hais Municipality in regional context.

The district has a population of approximately 200 000[4] people and (as with most of the Northern Cape) has a very low population density.

The relationship between //Khara Hais Municipality and Siyanda District Municipality is determined by Section 83 and Section 84 of the Municipal Structures Act 117 of 1998, which provides for the establishment of various categories and types of municipalities, and determines the powers and functions of such municipalities.

From a historic point of view, a 'Town Management' was established for Upington in 1898 and the town subsequently received municipal status. During 1994 the former 'Black Town Council', Paballelo, was incorporated into Upington and during 1995, the area known as Louisvaleweg was also incorporated. In 1995 and 2000 democratic elections were held and in September 2000 the municipal area was named Gariep. After the municipal elections in the year 2000 and the conclusion of the municipal demarcation the Municipality was renamed to //Khara Hais on 25 June 2001 (in terms of official notice K25/2001).

The Municipality is approximately 3 444 km² in extent and straddles the Gariep River. It includes the following settlements (refer to Figure 6):

a) Upington (including Paballelo and Louisvaleweg)
b) Lambrechtsdrift
c) Karos
d) Leerkrans
e) Leseding
f) Louisvale
g) Raaswater
h) 6 Brugge and Klippunt
i) Kalksloot

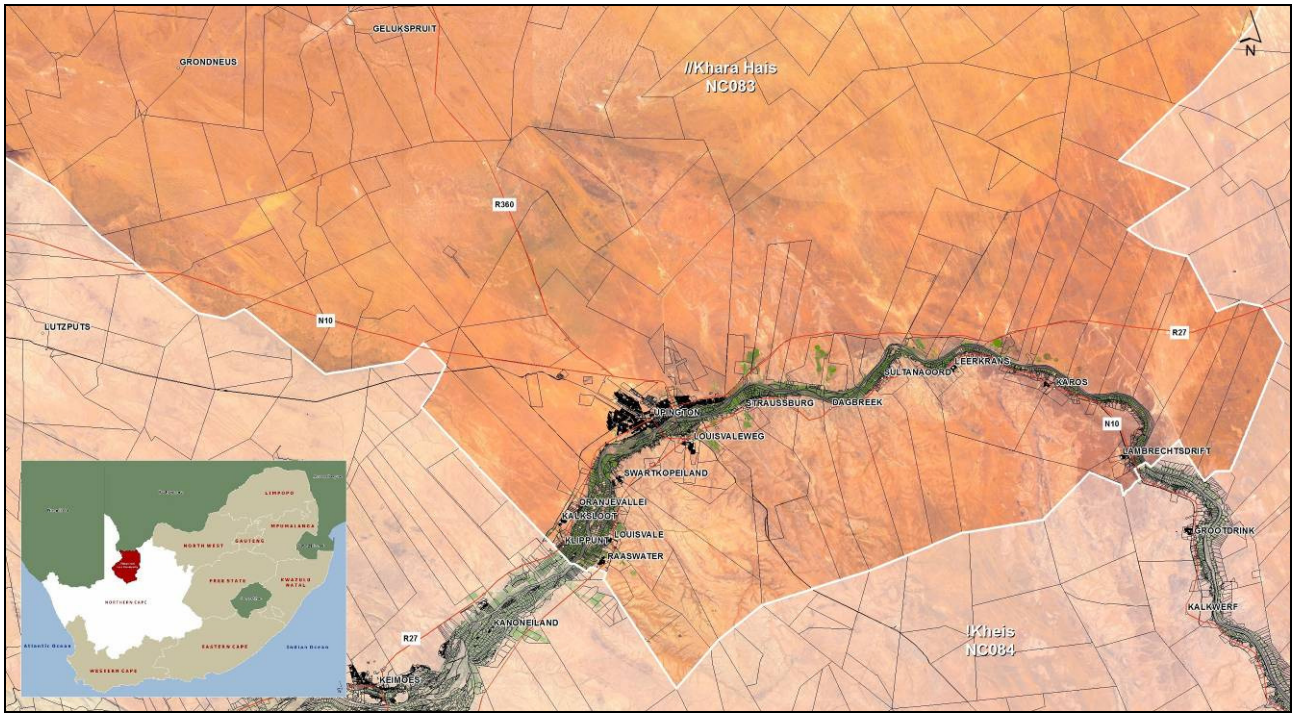


Figure 6: Local context of //Khara Hais Municipality.

[4] The census data was taken from the interactive tables for new demarcation boundaries as at 9 December 2005 provided by Statistics South Africa - http://www.statssa.gov.za/census01/html/C2001Interactive.asp

4 HISTORY

The //Khara Hais Municipality has a rich heritage and it encompasses the different cultures of the Nama, Koranna, settlers, missionaries, farmers, etc.

The main town of Upington dates back to the mid-19th century. According to history, in those days the remote northern reaches of the Cape Colony were home to cattle rushers, gun-runners, river pirates and outlaws of all kinds. Among the most sought-after hideouts were the densely-wooded islands in the Gariep River around the present-day Upington. From such a stronghold Nama Chief Jonker Afrikaner allegedly rustled cattle from other clans in the region, ranging as far as present-day Namibia.

At the time of Reverend Schröder, the early settlement of Upington was known to the hunters and traders as Olyvenhoutsdrift because of the wild olive trees ('olienhoutbome') growing around the mission station and along the river. In 1884, the settlement was visited by the new prime minister of the Cape Colony, Sir Thomas Upington, and promptly renamed the settlement in his honour. After a pontoon ferry service across the Gariep River was introduced, Upington became the main administrative centre for the vast region north of the Gariep River. The region was called, Gordonia, in honour of Sir Gordon Sprigg, four times prime minister of the Cape Colony between 1878 and 1892. Prior to this the area was known as Korannaland.

After the Second Koranna war of 1879, Sir Thomas Upington commissioned 80 policemen to the settlement to uphold peace and order along the river. A police station was constructed. Today, the statue of a camel and its rider in front of the police station commemorates both the mounties and mounts who, in those days, patrolled Gordonia and the Kalahari region from Upington (Erasmus, 2004)[5].

4.1 EARLY PIONEERS AND TRAVELERS

The arrival of Governor Jan van Riebeeck at the Cape threatened the land-rights of the Khoisan people. As the Dutch expanded their territorial rights they later clashed with different Khoisan tribes. The Khoi tribes of the Cape Peninsula (the Goringhaiqua and Goraxouqua) decided to leave the area as a result of these bloody clashes.

In 1672 the two tribes moved in a northerly direction and reached the Gariep River in 1680 and here they amalgamated and became known as the Korannas. They formed smaller groups which were ruled by tribe captains and each small tribe lived in a separate area (//Khara Hais IDP, 2004).

Photograph 1: A memorial at the //Khara Hais municipal offices that commemorate the achievements of Abraham 'Holbors' September

Klaas Lucas, an influential leader, had his main

[5] Erasmus BPJ 2004: *On Route in South Africa.* Jonathan Ball Publishers: Cape Town.

residence in the area of Olyvenhoudtsdrift, on the northern banks of the Gariep. His reed hut stood approximately where the historic mission house/rectory structures are located. According to history, this site was known as *//Khara Hais*. It is said that his stock kraals were located where the Upington High School is today.

In 1882, a farm was given to a former slave, Abraham 'Holbors' September. He is regarded as the founder of the region's irrigation system in that he explored the possibility of leading water on some alluvial soil on his farm – a system which is still fundamentally important to the agricultural economy of the region. September's innovative method of irrigation with the aid of a canal has been further developed and led to the construction of the first irrigation canal in the Lower Orange River in the late 1800s. This brought huge economic benefit for the entire region.

Another pioneer to the area was Japie Lutz who was responsible for the wide streets of Upington and the structured layout of the town.

A person also remembered is Scotty Smith. He was the so-called 'Robin Hood' of the area. He, allegedly, was a smuggler, horse thief, frontier fighter, gun-runner, illicit diamond buyer, and he spent much of his time on the verges of the desert in the Northern Cape, where he apparently hid most of his loot. Well-known and respected by the San, he robbed the rich to help the poor as his nickname indicates. He died in 1918 as a result of the influenza epidemic, a rather mundane death considering his restless life (Bulpin, 1990)[6].

4.2 MISSION STATION AT UPINGTON

In an effort to bring stability and spiritual solace to the area, Reverend Christiaan Schröder arrived in Upington in 1871 to establish a mission station. He completed construction of the necessary buildings and a rectory in 1883. The congregation consisted mainly of families of mixed Europeans and indigenous blood that settled on the banks of the Gariep River.

Reverend Schröder's original mission buildings have now been converted into the Kalahari-Orange Museum that also serves as the current //Khara Hais Tourism Bureau. The museum exhibition focuses on the pioneering history of the town and district.

Photograph 2: Part of the original mission buildings and a monument dedicated to the contribution the donkey made to the region's development (Source: DMP, 2007).

On the grounds there is a statue of a donkey, sculptured in bronze by Hennie Potgieter. This is to commemorate the contribution made by the donkey to the development of the region. Donkeys were *inter alia* used extensively to drive the early irrigation systems.

[6] Bulpin T.V. 1990. *Illustrated Guide to Southern Africa*. Reader's Digest, Cape Town.

4.3 ARCHITECTURE

There is no discernable architectural style in Upington and the surrounding settlements. Few of the original structures have remained and most buildings date from the Modern Era of architecture.

Most of the original town dwellings are simple structures, some of which have a covered verandah as shelter against the harsh climate. More modern homes have traces of the Victorian style. In the rural areas evidence exists of the indigenous corbelled houses ('Korbeelhuise') built by the 'Trekboere'.

Photograph 3: Dutch Reformed Church which dates back to 1911 (Source: DMP, 2007).

4.4 NATIONAL MONUMENTS

A number of buildings in Upington have been declared National Monuments in terms of the relevant legislation, including the:

- Roman Catholic Church (dates to 1861) in Le Roux Street.
- Dutch Reformed Church (dates to 1911).

Photograph 4: 1 km Date Palm Avenue at the entrance to *Die Eiland* Resort (Source: DMP, 2007).

- Hortentia water mill located on the road to Groblershoop (built in 1879 by Reverend Schröder).
- Missionary complex in Schröder Street that is today the Kalahari-Orange Museum.

The following buildings and sites have been identified by the museum as possible heritage resources (//Khara Hais IDP, 2004):

a) Abraham September's house.
b) The anchorage of the Pont (pontoon).
c) Scotty Smith's grave located in the historical cemetery in Keimoes Street.
d) The place where Commandant Stadler died during the 1914 Rebellion.
e) Van Riebeeck Hill battle site.
f) The site of the existing police station.
g) First School in Jan Groentjie Road in the Keidebees neighbourhood.
h) First Congregational Church located close to Gordonia Holiday Resort.

i) Co-operation mill on the way to Straussburg.
j) Date palm avenue consisting of 200 palm trees at the entrance of Die Eiland resort. At 1 km in length it is the longest line of date palms in the Southern Hemisphere.

In order to enhance the protection of heritage resources and to enable the creation of new resources of high integrity in Upington and the //Khara Hais Municipality as a whole a set of broad planning and design criteria and architectural guidelines is required.

5 ENVIRONMENTAL CHARACTERISTICS

5.1 CLIMATE

Upington is located 836 m above sea level in a semi-desert. The climate of the area is typical of a semi-desert and an arid savannah area. It is characterised by fluctuating temperatures, low and unpredictable rainfall and high evaporation rates.

The average summer temperature varies between 18°C and 36°C with extremes of up to 43°C. Winter temperatures are mild and vary between 3°C and 23°C. Rain usually occurs in spring and then again between February and April. The region has an average rainfall of 184 mm per year. The prevailing winds are northerly and westerly (//Khara Hais IDP, 2005). Frost occurs periodically. Most rainfall received in the area is of convective origin and occurs in summer. Storms are relatively brief, and peak intensities over 5, 10 and 15 minutes occur. Mean humidity is the lowest in South Africa.

Table 1: Summary of the climate in Upington (1961-1990)[7]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Total
Highest recorded temperature (°C)	42	42	41	38	34	29	29	33	39	40	41	43	43
Average daily maximum temperature	36	34	32	28	24	21	21	23	27	30	33	35	29
Average daily minimum temperature	20	20	18	13	8	5	4	6	9	13	16	19	13
Lowest recorded temperature	10	9	5	2	-2	-5	-6	-7	-2	2	5	6	-7
Average monthly precipitation (mm)	24	35	37	26	4	2	4	4	4	9	17	17	189
Average number of rain days	4	6	6	5	2	2	1	1	2	3	3	4	37
Highest 24 hour precipatation	33	59	46	52	26	13	7	40	19	22	51	42	59

(Source: South African Weather Service)

[7] This climatological information is the normal values and, according to World Meteorological Organization (WMO) prescripts, based on monthly averages for the 30-year period 1961 – 1990.

5.2 TOPOGRAPHY AND GEOLOGY

The Municipality is located in a relatively flat terrain characterised by shallow valleys and dry drainage lines. It forms part of the 'Great African Plateau' which was uplifted during the great Mesozoic and Tertiary earth movements. This plateau forms the largest part of the ancient continent of Gondwanaland which formally included Eastern Brazil, Southern India, Western Australia and Antarctica. In each of these fragments the general foundation is the same with an ancient surface of old rocks which together form the 'fundamental complex' of the ancient land-mass. Over time this surface was covered by sedimentary beds[8] in a freshwater inland lake and by means of wind blown sand (Siyanda EMF, 2007)[9].

The geology of //Khara Hais is characterised by the metamorphosed sediments and volcanic activity intruded by granites and is known as the Namaqualand Metamorphic Province. The soils are reddish, moderately shallow, sandy, and often overlay layers of calcrete of varying depths and thickness. The soils are typically weakly structured with low organic content. These soils drain freely which results in a soil surface susceptible to erosion, especially wind erosion when the vegetation cover is sparse (Bohlweki, 2006)[10].

Table 2: Geological units (lithostrat) represented in the //Khara Hais Municipality (refer to Figure 7)**.**

LITHOSTRAT	REF CODE	DESCRIPTION
Betadam Gabbronorite	Mbd	Dark grey gabbronorite forming irregular vein-like intrusions as well as plutons
Bethesda	Mbe	Biotite-rich and pelitic gneisses, muscovite-biotite schist, subordinate amphibolite and calc-silicate rocks
Biesje Poort	Mbp	Quartzite, quartz-feldspar gneiss, calc-silicate rocks, kinzigite, subordinate marble, amphibolite and aluminous gneiss
Blauwbosch Granite	Mbg	Medium-grained, porphyritic, unfoliated syeno-granite occurring as several small stocks
Colston Granite	Mcs	Weakly foliated, coarse-grained, grey biotite granite
Curries Camp Gneiss	Mcc	Coarse-grained to megacrystic quartz-feldspar gneiss (intrusive)
Dagbreek	Mdg	Quartz-muscovite schist, quartzite, subordinate gneiss and amphibolite
Dwyka	C-Pd	Diamictite (polymictic clasts, set in a poorly sorted, fine-grained matrix) with varved shale, mudstone with dropstones and fluvioglacial gravel common in the north
Dyasons Klip Gneiss	Mdy	Brown-weathering porphyroblastic to megacrystic gneiss (intrusive)
Fish River	(E)f	Red sandstone/quartzite, interbedded red siltstone and shale
Friersdale Charnockite	Mfr	Dark-weathering, fine- to medium-grained, inequigranular (locally porphyritic) charnockitic adamellite
Goede Hoop	Mgh	Quartzite, quartz-muscovite schist, conglomerate lenses
Groblershoop	Mg	Schist, subordinate quartzite and metalava (greenstone)
Jannelsepan	Mj	Amphibolite, amphibole gneiss, subordinate biotite, quartz-feldspar and politic gneisses, calc-silicate rocks and mica schist.
Kakamas Suid Gneiss	Mkm	Grey augen gneiss (intrusive)
Kalahari	K-Q	Superficial deposits comprising gravels, clays, sandstone, silcrete, calcrete and Aeolian sand
Kalkwerf Gneiss	Mkw	Red-brown, coarse-grained granite gneiss
Kameel Puts	Mkp	Quartz-feldspar and biotite gneiss, amphibolite, lenses of conglomerate, calc-silicate rocks, marble and quartzite
Kanoneiland Granite	Mke	Medium- to coarse-grained, moderately foliated, mesocratic granite with scattered

[8] Sedimentary beds refer to beds that formed from eroded material that weathered from existing surfaces that are deposited in a different place as a result of movement by water and wind (aeolian).

[9] Siyanda Environmental Management Framework (EMF) Draft Status Quo Report, August 2007. EnviroNomics *et al* for Department of Environmental Affairs and Tourism, Northern Cape Department of Tourism, Environment & Conservation and The Siyanda District Municipality.

[10] Bohlweki Environmental (Pty) Ltd. 2006. *Environmental Scoping Study for the Proposed Establishment of a Concentrating Solar Power (CSP) Plant and Related Infrastructure in the Northern Cape Province*. ESKOM Holdings Limited. Midrand.

		phenocrysts
Keboes Granite	Mke	Medium-grained, moderately foliated, porphyritic granite
Kleinbegin	Mkd	Medium- to coarse-grained, weakly foliated granites
Koras	Mkr	Basic and acid lava, volcaniclastic rocks, sandstone, conglomerate
Kuibis	Nku	Quartzite
Leerkrans	Ml	Basic and acid volcanic rocks, schist
Lousivale Granite	Mlv	Light grey, moderately to well foliated biotite granite
Luptzputs Gneiss	Mlp	Sillimanite- and garnet-bearing granitic gneiss
Ratel Draai	Mrd	Kinzigite
Riemvasmaak Gneiss	Mrv	Pink-weathering granular or augen quartz-feldspar gneiss
Rooiputs Granophyre	Mrg	Grey, medium-grained, unfoliated granophyre
Sout River	Mso	Fine- to medium-grained biotite gneiss, muscovite gneiss, sillimanite-bearing gneisses
Sprigg	Msr	Quartz-feldspar-biotite-muscovite schist, subordinate garnet-sillimanite-biotite gneiss, quartzite and conglomerate
Straussburg Granite	Msb	Grey, coarse-grained, inequigranular, moderately foliated biotite granite with numerous xenoliths
Sultanaoord	Msu	Massive quartzite, subordinate phyllite
Swanartz Gneiss	Msz	Porphyroblastic biotite gneiss
Vaalputs Granite	Mvp	Grey, well-foliated, medium-grained, locally porphyritic adamellitic granite with abundant xenoliths
Zonderhuis	Mz	Quartzite, phyllite, schist, dolomite, conglomerate

Furthermore, a large proportion of the Municipality falls in the Ghaap Plateau physical geographical region. The Ghaap Plateau is a higher lying, pre-Karoo surface with its main physiographic element being the surface of dolomite that gives the form to the plateau. The plateau is separated from the Postmansburg plain by the Langeberg-Koranna ranges which are made up out of Matsap quartzites that form the boundary of the Kalahari to the west. The Ghaap Plateau is a roughly triangular limestone area. There are strong limestone springs on the western side of the plateau (Siyanda EMF, 2007).

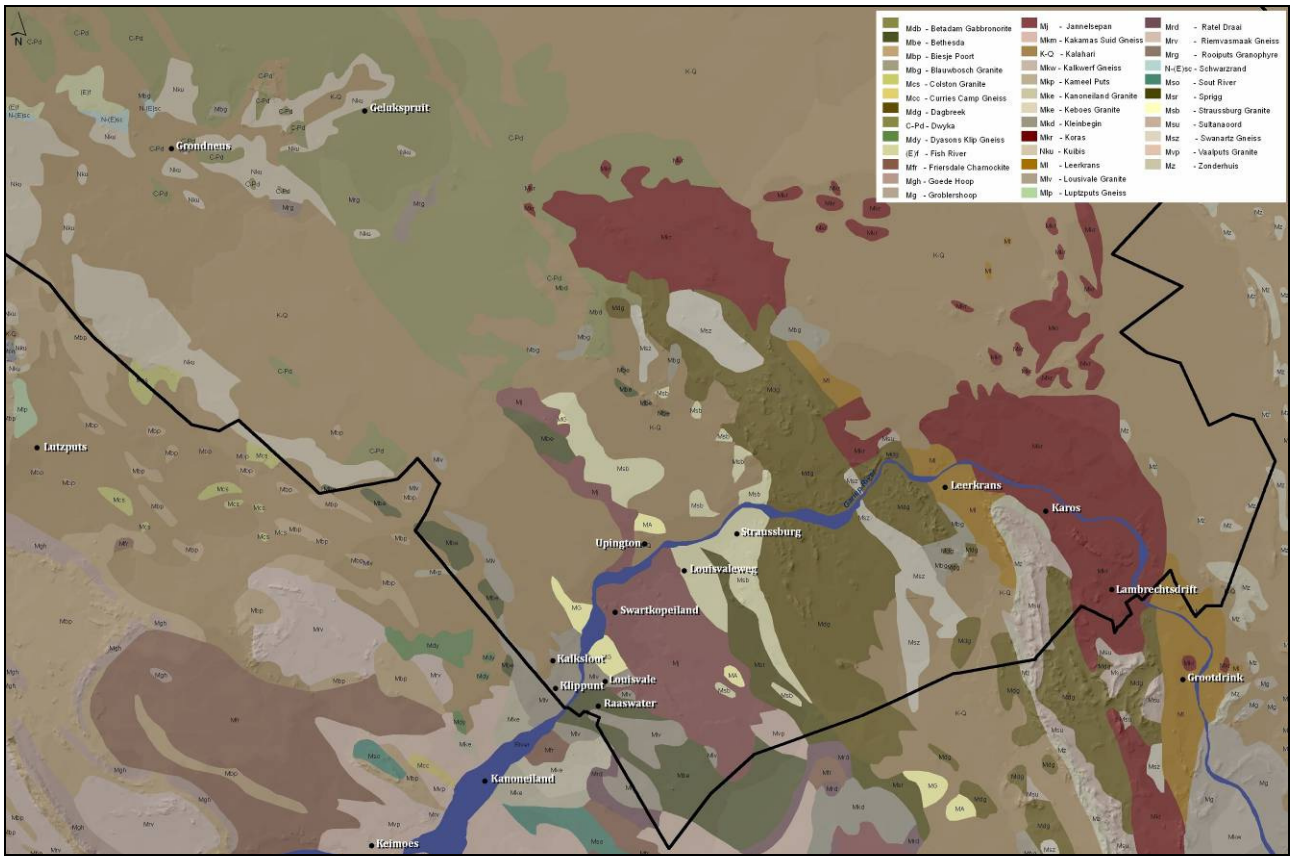


Figure 7: Dominant geological characteristics of the //Khara Hais Municipality (Source: EnviroNomics *et al*, 2007).

The soils of the flat lowlands areas can be described as red, eutrophic (high base status) and excessively drained sandy soils. The soils often overlay thick layers of calcrete, which is known for its hardness. The average clay content of the topsoil is less than 10-15% and the soil depth varies between 400 and 750 mm.

Table 3: Soils of the //Khara Hais Municipality.

Soil Description	
a)	Red, yellow and greyish excessively drained sandy soils (Arenosols). These soils are also very prone to wind erosion.
b)	Red massive or weak-structured soils with high base status (association of well-drained Lixisols, Cambisols, Luvisols).
c)	Soils with minimal development, usually shallow or hard or weathering rock with or without intermittent diverse soils; lime generally present in part of most of the landscape. (Association of Leptosols, Regosols, Calsisols and Durisols). In addition, one or more of Cambisols and Luvisols may be present.
d)	Soils with negligible to weak profile development usually occurring on recent flood plains (association of Fluvisols, Cambisols, Luvisols and Gleysols).

The soils in the area are generally not suitable for dry land crop production and the only area where intensive crop cultivation is feasible is along the Gariep River where irrigation is possible. Soil salination may be a problem in certain irrigated areas (Siyanda EMF, 2007).

5.3 HYDROLOGY AND WATER MANAGEMENT

//Khara Hais Municipality falls within the *Lower Orange Water Management Area* (LOWMA)[11]. The LOWMA's natural environment is generally characterised by an arid climate with minimal rainfall and drought conditions, with occasional severe flooding. The evaporation (including evapotranspiration) is as high as 3 000 mm per annum, which is generally more than the Mean Annual Rainfall. As a result, little usable surface runoff is generated over most of the area as a result of the extremely low and infrequent rainfall. With the exception of the Gariep River, all the rivers in the Municipality are non-perennial rivers (Siyanda EMF, 2007).

5.3.1 GARIEP RIVER

The Gariep River forms a green strip through this dry landscape and is the main drainage channel in the area (refer to Figure 6 on Page 11).

The Gariep River was created by volcanic eruptions two hundred million years ago in Southern Africa. These massive lava flows created the Drakensberg Mountains. The run-off of these mountains created the Gariep River flowing in a westerly direction towards the Atlantic Ocean. At almost one million km² the Gariep River basin is the largest basin south of the Zambezi River. It is the most developed trans-boundary river basin in Southern Africa and feeds numerous water transfer schemes which supply water to municipalities, industries and farms in and outside of the catchment of the river (Earle *et al*, 2005)[12].

[11] MS Basson and JD Rossouw. Report number PMWA 14/000/00/0203. *Lower Orange Water Management Area: Overview of water resources availability and utilization.* Department of Water Affairs and Forestry (DWAF), South Africa, September 2003.

[12] Earl A, Malzbender D, Turton A & Manzungu E. 2005: *A Preliminary Basin Profile of the Orange/Senqu River.* INWENT.

Rain in the highlands of Lesotho (average of 2 000 mm per year) and snowfalls feed the river. The flow reaches its peak in the summer months, while in winter the river is often reduced to little more than a series of deep pools linked by a trickle of water. At all times the water of the Gariep is free of bilharzia. The water freshets of melted snow effectively destroy the snails which carry bilharzias in tropical rivers. Even mosquitoes are no great problem along its course. The abundant fish eat the larvae, and the type of mosquito that breeds is not a malaria carrier.

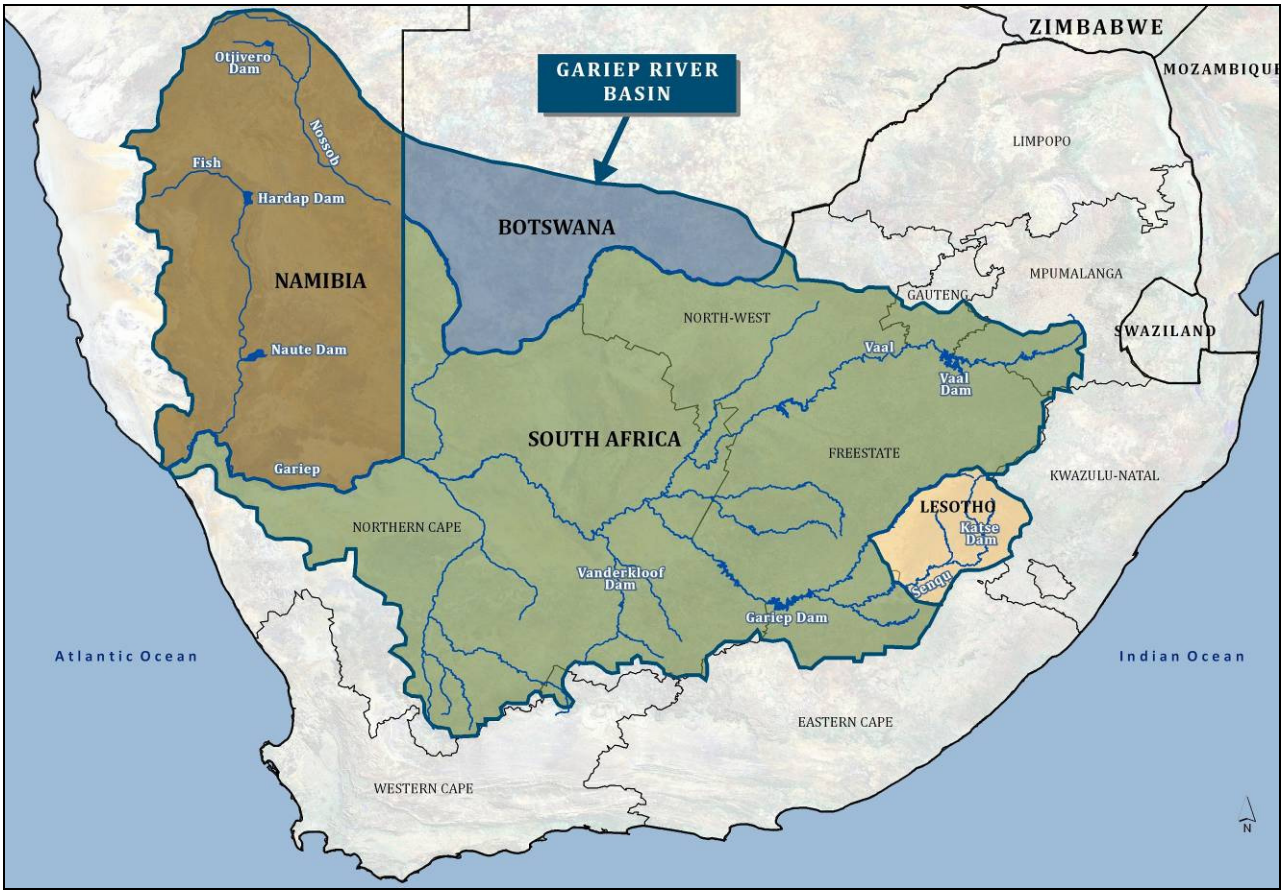


Figure 8: The Gariep River Basin (Source: WRP as cited in Earl *et al* 2005).

The Gariep River basin stretches over a number of countries, namely South Africa, Lesotho, Botswana and Namibia and forms the border between South Africa and Namibia (refer to Figure 8 above). These countries cover a range of ecological zones – the high-rainfall mountainous areas of the Lesotho Highlands, through the savannah grasslands of the central plateau to the desert conditions in the western part of the basin.

5.3.2 GROUND WATER

Due to the perennial Gariep River very little use is made of ground water and only a few boreholes occur within the municipal boundaries. Along the river the water table is as shallow as 2 meters but it becomes deeper further away from the river. In the rural areas ground water is primarily used for watering of livestock.

Since this resource is not exploited or developed, little information is available regarding the amount and quality of ground water. It is expected that such water will have relatively high calcium deposits and that most of it will be brackish as a result of high concentrations of dissolved salts. High concentrations of fluoride are also common (//Khara Hais IDP, 2005).

5.3.3 SURFACE WATER: GARIEP RIVER

Surface water is mainly used for agricultural irrigation. With the increase in farming activities the need for water increased dramatically and the Gariep River has become a natural resource of growing importance. The LOWMA Report (2003) recorded irrigation as the dominant water use in the LOWMA sector representing a total of 94%, which is a total of 977 million m³ of water per annum of the total 1 028 million m³ of water used per annum in the year 2000 (refer to Figure 9).

The flow of the Gariep River varies between 50 and 1800 m³ per second, depending on the season. The flow of the river is controlled mainly by discharges from upstream dams such as the Bloemhof, Gariep and Van der Kloof dams. The //Khara Hais Municipality is presently the holder of a permit authorising the withdrawal of 25 million m³ of water per year from the Gariep River for urban use.

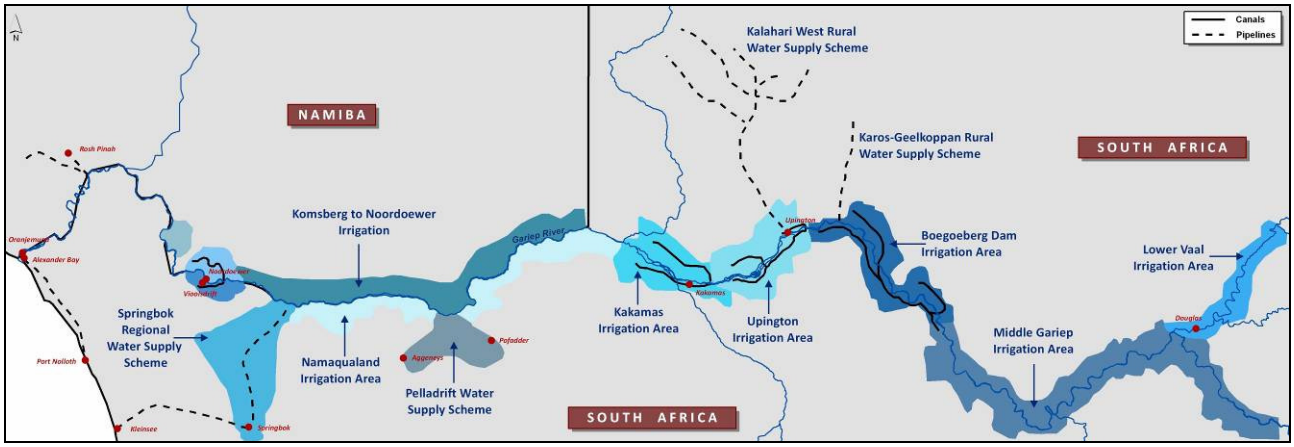


Figure 9: Areas under irrigation and water supply schemes in the South African part of the Lower Gariep River Basin (Source: DWAF as cited in Earle *et al,* 2005).

The Boegoeberg Dam enables irrigation of the rich alluvial soils downstream from Upington. The crops most suited to this part of the Gariep River valley include lucerne, grapes and wheat, with subsidiary crops of vegetables, deciduous fruits and maize. Between Upington and the Augrabies Falls irrigation is closely linked to river gradients and low flows. Flooding remains a danger especially to the numerous islands that occur in the river. Between Upington and the Friersdale rapids, the river valley and islands forms a second distinct irrigation area. In this area the crops include lucerne, grapes, wheat and much smaller crops of vegetables, cotton, deciduous fruits, maize and citrus (Siyanda EMF, 2007).

The current maximum withdrawal in the peak season amounts to 28 000 m³ per day. The quality of the water in the Gariep River is deteriorating. Reasons for this are the increasing agricultural and industrial activities upstream from Upington, as well as the lower inflow of low quality water from Lesotho (//Khara Hais IDP, 2005).

The quality of the water varies with the seasons and also depends upon which river the main supply comes from. From the Gariep River, the turbidity, sand and sludge contents are usually high whilst the water from Vaal River generally has large amounts of nutrients that results in the growth of algae (//Khara Hais IDP, 2005).

There are many islands in the Gariep River, in the vicinity of Upington, where irrigation has been practised since as far back as 1883, when the first canal was constructed. Irrigation on these islands and is now controlled by the Upington Irrigation Board.

Gifkloof Weir also diverts water to the left bank of the Gariep River into the Upington Islands Government Water Schemes (GWS). Both banks of the river and the islands are irrigated and water is supplied via a network of secondary canals and syphons. The left bank canal has an initial capacity of approximately 10 m^3 per second and supplies water to the Upington Islands GWS. A series of secondary canals and siphons supply water to irrigation land on the left and right banks of the river and to the islands in the river. The total length of the main canal is 58.5 km. Steynsvoor canal, which supplies water to the Steynsvoor Irrigation Board, branches from the end of reach 5 of the Upington Island Canal. Water is transferred to this canal on the right bank of the river by means of the Steynsvoor siphon. The scheduled area for irrigation from the Upington Main Board canals is 5 846 ha, while 407 ha is scheduled with water abstraction from the river (Lower Orange WMA, March 2002).

Upington and all other settlements derive their raw water from the Gariep River either by direct withdrawal or from an irrigation canal. Water is pumped through a rising conduit and various pumps from the inlet in the river, to the purification works (//Khara Hais IDP, 2004).

5.3.4 RECYCLED WATER

The outflow from Upington's sewerage works amounts to in the order of 12 million litres per day. A small portion of this water is reused for irrigation of the Union sports grounds, while the rest is returned to its source. The quality of the water that is returned is better than the quality of the water in the Gariep River, and with the necessary adjustments to the purification process it would be possible to recycle this water fully. Furthermore, the quality of the recycled water complies with the general standard of DWAF.

6 BIOPHYSICAL CHARACTERISTICS

6.1 BIOMES REPRESENTED IN //KHARA HAIS MUNICIPALITY

The Municipality falls within two distinct biomes, namely the Nama-Karoo Biome and the Savanna Biome. The key aspects of the two biomes are as follows:

6.1.1 NAMA-KAROO BIOME

The Nama-Karoo Biome occurs on the central plateau of the western half of South Africa, at altitudes between 500 and 2000 meters above mean sea level, with most of the biome located between 1000 and 1400 meters. More than 80% of the biome is covered by a lime-rich, weakly developed soil over rock. Although less than 5% of rain reaches the rivers, the high erodibility of soils poses a major problem where overgrazing occurs (DEAT, 2000).

Plant species that occur in the Nama Karoo include Sweet Thorn (*Acacia karroo*), Three Thorn (*Rhigozum trichotomum*), Bitterbos (*Chrysocoma ciliate*), Stone Plant *(Lithos ruschiorum)*, and Karoo daisy *(Felicia austalis).* The dominant vegetation is a grassy, dwarf shrubland. Grasses tend

to be more common in depressions and on sandy soils, and less abundant on clayey soils. Most grasses and shrubs are deciduous in response to rainfall.

The large historical herds of Springbok and other game no longer exist. The historic game populations were nomadic between patches of rainfall events within the biome. The Brown Locust and Karoo Caterpillar exhibit eruptions under favourable rainfall events and attract large numbers of bird and mammal predators.

6.1.2 SAVANNA BIOME

The Savanna Biome is the largest biome in southern Africa, occupying 46% of its area, and over one-third the area of South Africa. It is well developed over the lowveld and Kalahari region of South Africa and is also the dominant vegetation in Botswana, Namibia and Zimbabwe.

It is characterised by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is relatively low, this vegetation type is often referred to as *Shrubveld*. Dense areas are often referred to as *Woodland*, and the intermediate stages are known as *Bushveld*. A major factor that determines the distribution of this biome is low rainfall which prevents the upper layer from dominating.

The grass layer prospers where the growing season is hot and moist. Most of the savanna vegetation types are suitable for grazing.

6.2 VEGETATION TYPES

The vegetation types occurring in the Municipality are summarised in the table below.

Table 4: Vegetation types represented in //Khara Hais Municipality (Source: Siyanda EMF).

VEGETATION TYPES	
Bushmanland Arid Grassland	Occurs in some of the most arid parts of South Africa where the topography is generally flat and most of the region lies at about 900m. Soils are quaternary sands and Karoo Sequence shales which give rise to weak and structureless clay and sandy soils. Structurally Bushmanland Nama Karoo is dominated by annuals and non-succulent shrubs. In the more sandy parts of this region the vegetation is dominated by Cauliflower Ganna (*Salsola tuberculata)* and after good summer rains by Small Bushman Grass *(Stipagrostis obtuse)* and Tall Bushman Grass *(S. ciliate).* In the more rocky areas, Thorny Kapokbush *(Eriocephalus spinescens),* Thom Vygie *(Eberlanzia spinescens),* and especially Three Thorn are important species. Annuals, such as *Pentzia annua* and Brakspekbos *(Zygophyllum simplex),* are common and together with geophytes comprise nearly 50% of the total number of species in the region. This type is very poorly conserved, with no major conservation areas occurring. Riverine areas are invaded by Mesquite and Three Thorn mainly where heavy grazing occurs.
Gordonia Duneveld	This type consists of loose to partially stabilised sand dunes with very sparse vegetation that occurs primarily at the footslopes of such dunes. There are no known endemics in this vegetation and at national scale this vegetation type has not been transformed. Although none of this vegetation is conserved, it is not considered to be a threatened vegetation type. It contains protected tree species such as Camel Thorn *(Acacia erioloba)* and Sheppard's Tree *(Boscia albitrunca).*

Kalahari Karroid Shrubland	This type is found in the drainage basin of the Gariep River Calcrete crops, where alluvial deposits as well as soils derived form the ancient basement garnites and geniesses of the Namaqua Mobile Velt occur on extensive plains. On the pediments the shrub layer is poorly to well developed and individuals of Black Thorn *(Acacia mellifera),* Three Thorn *(Rhigozum trichotomum),* Karee-thorn *(Lycium boscifolium)*, Sheperd's Tree *(Boscia albitrunca)* and Stink Sheperd's Tree *(Boscia foetida)* can be found. On the banks of the Gariep River and its tributaries, shrubs and trees such as Buffalo Thorn *(Ziziphus mucronata),* Wild Tamarisk *(Tamarix usneoides)* and Ebony *(Euclea pseuoebenus)* occur. The grass layer is generally poorly developed and depends on the amount of rainfall during the growing season. Lehman's Love grass *(Eragrotis lehmanniana),* Sour Bushman *(Schmidtia kalahariensis),* Silky Bushman grass *(Stipagrotis ciliate)* and *Stipagrotis obtuse* can dominate large areas (Bohlweki Environmental, 2006).
Lower Gariep Alluvial Vegetation	This vegetation occurs on flat alluvial terraces and riverine islands. The vegetation consists of a complex of riparian thickets dominated by *Ziziphus mucronata, Euclea pseudebenus* and *Tamariz usneoides,* reed beds with *Phragmites australis* and flooded grasslands and herblands along sand banks and terraces within and along the river. There are no known endemics in this vegetation type. Little of this vegetation is conserved and its highly transformed by cultivation (approximately 50%). It is considered to be a threatened vegetation type classified on a national scale as Endangered with only about 6% conserved. A significant proportion of the vegetation has been transformed by especially agriculture in the Gariep River floodplain.
Lower Gariep Broken Veld	This type is found on rocky terrain. Its name refers to the scattered individuals of tall shrubs and small trees (2m to 3m in height) that 'break' the uniformity of the low shrub layer, which is rich succulents. The most characteristic plant is the giant aloe called quiver tree (kokerboom) *(Aloe dichotoma).* The quiver tree is adapted to the dry desert and semi-desert areas on the rocky hills, the extreme temperatures, and the infertile soil. The Camel Thorn is also a dominant species in the region and the Sweet Thorn Tree occurs mainly along rivers and drainage lines. The Shepherd's tree or 'Witgat' also occure here. Other plants which are easily spotted in the vicinity are Desert broom *(Sisyndite spartea),* Namaqua porkbush *(Cereria namaquensis)* and Bushman grass *(Stipagrotis hochstetterina).*
Southern Kalahari Salt Pans	This type occurs as low grasslands on pan bottoms (these are often devoid of vegetation) often dominated by *Sporobolus* species, with a mixture if dwarf shrubs. The low shrubland dominated by *Lycium* and/or *Rhigozum* usually forms part of the outer belt in the salt-pan zonation systems.
Bushmanland Vloere	This vegetation occurs in patches throughout the flat areas in pans and the broad bottoms of seasonal rivers. Often the centre of the pan or the river drainage channel itself is devoid of vegetation. It is loosely patterned scrub dominated by *Rhigozum trichotomum* and various species of *Salsola* and *Lycium*, in combination with a mixture of non-succulent dwarf shrubs of Nama Karoo origin. Thickets of *Parkinsonia africana, Lebeckia linearifolia* and *Acacia karoo* occur in places.

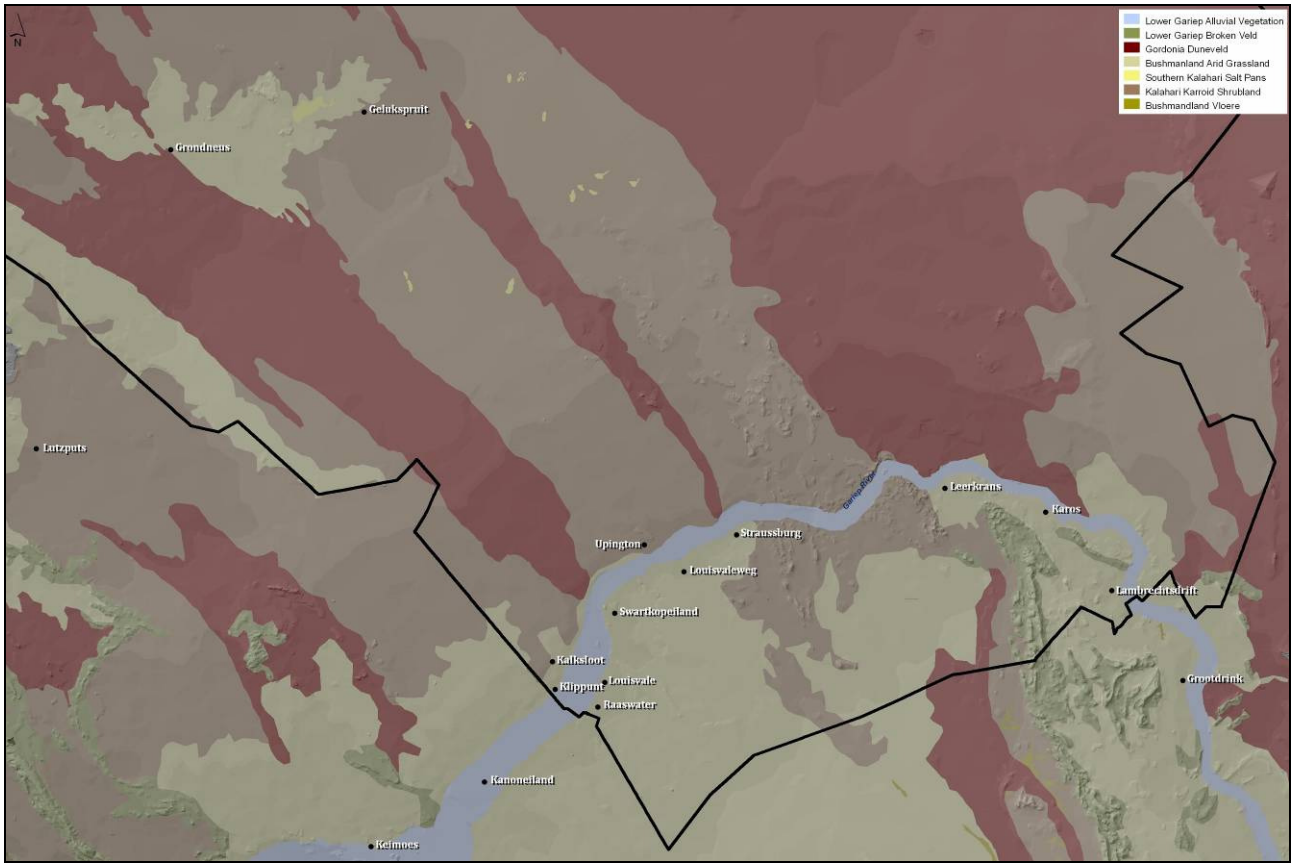


Figure 10: Vegetation types of the //Khara Hais Municipality.

6.3 FAUNA

Approximately 200 years ago, Johan Jakob Wikar trekked around the present Upington and described the presence of numerous groups of lion, elephant and hippopotami along the Gariep River.

These were however all hunted to extinction and today remnants of animal populations are found on farms and in the municipal Spitskop Nature Reserve. Species that occur include Gemsbok (*Oryx gazelle*), Zebra (*Equus quagga*), Springbok (*Antidorcas maruspialis*), Eland (*Taurotragus oryx*), Ostrich (*Struthio camelus*), Red Hartebeest (*Alcelaphus buselaphus*), etc.

Mammals such as Cape Grey mongoose (*Galerella pulverulenta*), Cape porcupine (*Hystix africaeaustralis*), Bushveld gerbil (*Tatera leucogaster*), Springhare (*Pedets capensis),* etc. are also found in the Municipality (Siyanda EMF, 2007).

Avifauna found in the Municipality include, *inter alia,* Rock Kestrel, Pygmy Falcon, Cape Turtle Dove, Rock Pigeon, Barn Owl, Little Swift, Greater Striped Swallow, Laughing Dove, Namaqua Dove, Ashy Tit, Spike-heeled Lark, etc. The Black Harrier occurs in open grassland, scrub, semi-desert and mountain areas and is endemic to southern Africa, mostly in South Africa. It is reliant on private farmland and is vulnerable to changing land-use. The Ludwig's Bustard occurs in open plains of the semi-arid Karoo. They are highly susceptible to collisions with overhead powerlines and telephone wires, the single most important threat to this species (Bohlweki Environmental, 2006).

The indigenous freshwater fish community of the Gariep River is rather poor despite the river's large size. Fifteen indigenous fish species have been recorded in the Gariep River, although one of these, *Anguilla mossambica*, is a rare vagrant that probably only occasionally traverses across from eastern drainages. The Gariep River is dominated by the family Cyprinidae (minnows, mud fishes and yellow fishes) (73%). Seven species are endemic to the system (50%) (SAIAB, 2007)[13].

7 HUMAN RESOURCES

The socio-economic data provided by Statistics South Africa was used in the preparation of the SDF. The census data was taken from the interactive tables of the 2001 South African Census as amended on 9 December 2005 after provision was made for the new demarcation boundaries[14].

A Community Survey was undertaken by Statistics South Africa during 2007 as a result of the gap in data created by the decision of Cabinet to move away from 5-year to 10-year censuses[15]. The Community Survey also took the newly demarcated municipal boundaries (released in December 2005) into consideration. Although Statistics South Africa states that the Community Survey is not a replacement of the Census, the measurements were adjusted to a best estimate and the Survey does give useful information.

A detailed socio-economic survey was also undertaken by Macroplan on behalf of //Khara Hais Municipality during April and September 2008. The Macroplan study was based on a 100% survey of the urban areas and a 33% random sample in the rural areas. The survey provides information on a ward and suburb basis, different from the information that is provided by the central statistical services. The latter is especially important in the identification of key issues in specific areas within the Municipality.

The discrepancies between 2001 Census Data, the 2007 Statistics South Africa Community Survey and the 2008 Macroplan Socio-Economic Survey will be indicated, where possible, to assist in addressing societal needs, implementing development strategies and monitoring the progress of governmental development programmes (Stats SA & HSRC, 2007)[16].

7.1 DEMOGRAPHY

The population in the //Khara Hais Municipality is mainly distributed in and around Upington, including Paballelo and Louisvaleweg, with approximately 81% of the population residing in the urban area.

Table 5: Population composition of //Khara Hais Municipality.

ETHNIC GROUP								TOTAL POPULATION	
BLACK		COLOURED		WHITE		INDIAN/ASIAN			
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
7 503	7 013	24 086	26 093	5 195	5 718	35	28	36 819	38 852
14 516		**50 179**		**10 913**		**63**		**75 671**	

(Source: SA Census, 2005)

The estimated population of //Khara Hais Municipality is 75 671 people with the major ethnic group being the coloured population, representing 66% of the entire population (refer to Table 5).

13 South African Institute for Aquatic Biodiversity (SAIAB) 2007: Gariep River Fishes.

14 http://www.statssa.gov.za/census01/html/C2001Interactive.asp

15 Statistics South Africa. 2008. *Community Survey 2007: Statistical Release Basic Results Municipalities*. P0301.1. www.statssa.gov.za

16 Statistics South Africa & Human Sciences Research Council. 2007. Using the 2001 Census: Approaches to Analysing Data. Pretoria

The sex structure is almost equal with 51.3% (38 852) of the total population being female. The male population constitutes the remaining 48.7% (36 819).

7.1.1 DEMOGRAPHIC ASPECTS WHICH CAN HAVE AN IMPACT ON FUTURE DEVELOPMENT

Demographic information constitutes the bedrock of all socio-economic planning. The collection, analysis and dissemination of accurate demographic information enable policy makers to plan for the future development of a country. Issues such as the future size of the labour market, unemployment, job creation, poverty and environmental degradation are intrinsically linked to demographic processes. It is therefore important to base future development policies and programmes on the most accurate demographic information available. Discrepancies between the Statistics South Africa data sets which will generally be used by especially National Government and more detailed data sets reflecting more accurate information could be problematic and must be highlighted in order to ensure that the progress of governmental development projects are assessed appropriately.

a) Discrepancies between Census Data and Socio-Economic Survey

The Demographic and Socio-Economic Survey (Macroplan, 2008) estimates the population on 78 393, while the 2001 Census set the number on 75 671 (a difference of 3 195).

Table 6: Population composition according to 2008 Socio-Economic Survey.

ETHNIC GROUP				TOTAL POPULATION
BLACK	COLOURED	WHITE	OTHER	
13 846 (18%)	53 293 (68%)	10 969 (14%)	284 (0%)	**78 393**

(Source: Macroplan, 2008)

The different estimations of the population of //Khara Hais can complicate the allocation of funds canalised from national and provincial government to the Municipality and may also influence municipal social and development policies and projects.

b) Discrepancy between //Khara Hais IDP, 2001 Census and Socio-Economic Survey Population Growth Projection

Over the past 10 years the Northern Cape and //Khara Hais Municipality had a fairly slow population growth rate. In fact, the Northern Cape Province was the only province where the population decreased between 1996 and 2001.

Based upon an expected population growth rate of 2 % the Municipality calculated that the population of //Khara Hais would increase during the period from 2002 to 2012 from 72 476 (Demographic and Socio-Economic Survey[17] estimate) to 88 348. It is estimated that the population will increase to 107 696 from 2012 to 2022.

The 2007 Community Survey indicates a significant increase from the 2001 Census data (refer to Figure 11). Statistics South Africa estimate the population of //Khara Hais at 100 920 for 2007 which represents an increase of 33.36%.

[17] Demographic and Socio-Economic Survey that was undertook by Macroplan during November and December 2002.

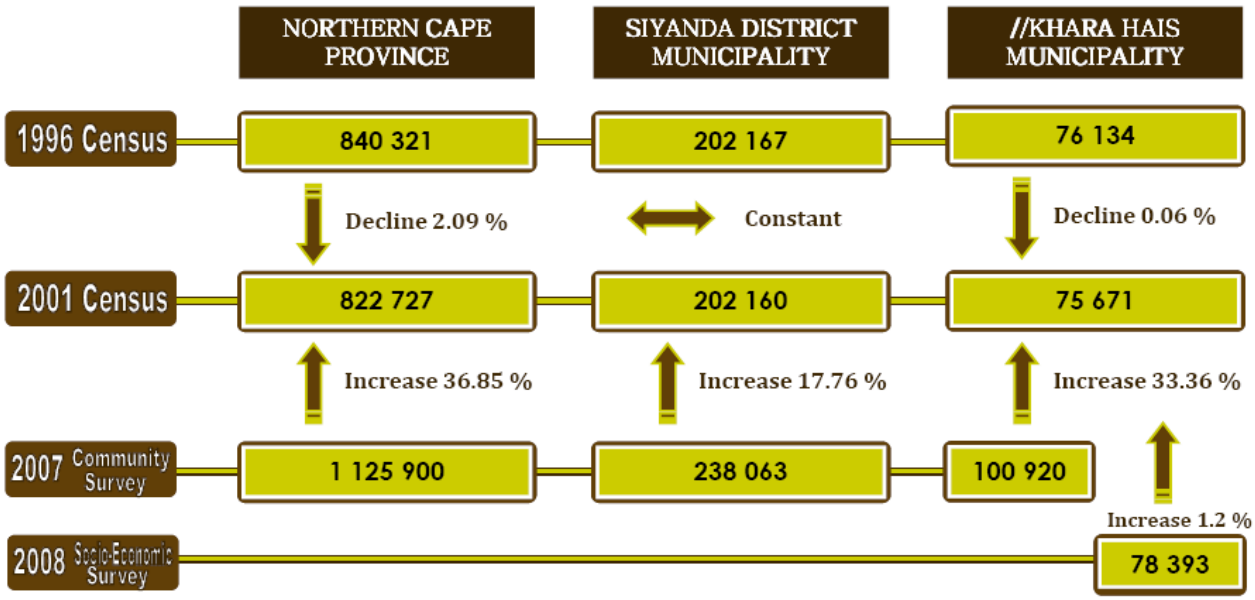


Figure 11: Growth Tendencies and Population Estimations.

The population estimate of the Community Survey represents a significant discrepancy in the population composition estimated by Statistics South Africa and //Khara Hais Municipality. This will ultimately influence the population growth rate projected for the Municipality, which in turn could influence the development and service delivery capabilities, infrastructure investment and the amount of government funds allocated to the Municipality.

A more accurate population growth rate of 1.2% can be obtained from comparing the 2008 Socio-Economic Survey with the 2001 Census data. Based upon these more detailed estimates it is predicted that the population will increase from 78 393 in 2008 to 82 224 in 2012, up to 90 644 in 2022.

c) Composition of the population

A third of the population in //Khara Hais is under the age of 15 years (32%) (refer to Table 7 on the following page). This holds significant implications for future development planning as this section of the population will become economically active within the next 5 to 10 years. A consistent economic growth rate and the creation of sufficient job opportunities are therefore of importance. Approximately 5% of the population are older than 65 years. It is envisaged that this percentage will increase to approximately 11 % over the next 10-15 years. Most members of this group of people are not economically active.

Table 7: Population Structure of //Khara Hais Municipality.

Age Group	African/Black		Coloured		Indian/Asian		White		% of Population (75 671)	TOTAL
	Male	Female	Male	Female	Male	Female	Male	Female		
0-4	749	729	2 884	2 907	3	4	300	290	10.39 %	7 866
5-9	752	781	3 028	2 959	3	4	362	358	10.90 %	8 247
10-14	713	724	2 847	2 810	3	3	461	489	10.64 %	8 050
15-19	786	730	2 779	2 787	4	0	589	592	10.92 %	8 267
20-24	754	663	2 147	2 214	0	0	317	355	8.52 %	6 450
25-29	772	613	1 887	2 016	0	0	407	377	8.02 %	6 072
30-34	759	606	1 797	1 943	7	4	436	422	7.89 %	5 974
35-39	578	495	1 568	1 853	9	4	399	453	7.08 %	5 359
40-44	456	452	1 372	1 515	3	5	342	437	6.06 %	4 582
45-49	285	309	1 027	1 282	3	4	375	353	4.81 %	3 638
50-54	200	229	814	1 061	0	0	295	289	3.82 %	2 888
55-59	163	199	584	776	0	0	245	289	2.98 %	2 256
60-64	157	187	494	678	0	0	228	262	2.65 %	2 006
65-69	151	131	369	532	0	0	164	206	2.05 %	1 553
70-79	156	114	358	503	0	0	200	371	2.25 %	1 702
80+	72	51	131	257	0	0	75	175	1.01 %	761
TOTAL	**7 503**	**7 013**	**24 086**	**26 093**	**35**	**28**	**5 195**	**5 718**	**100%**	**75 671**

(Source: SA Census, 2005)

7.2 SERVICES AND INFRASTRUCTURE

The services and infrastructure information is based on the 2001 Census Data. The discrepancies between 2001 Census Data, the 2007 Statistics South Africa Community Survey and the 2008 Macroplan Socio-Economic Survey will be indicated, where possible, to assist in addressing societal needs, implementing development strategies and monitoring the progress of governmental development programmes

7.2.1 GENERAL INFRASTRUCTURAL AND SERVICE DELIVERY INFORMATION

Macroplan (2008) states that most people residing in the //Khara Hais Municipality seem either satisfied with their overall quality of life (56%) or seem more or less satisfied with the general infrastructure and service delivery (23%).

Table 8: Satisfaction with Quality of Life.

WARD		AREA	YES (%)	MORE OR LESS (%)	NO (%)
1	A	Berge	52	34	14
	B	Koppe	76	10	14
2	A	Old Rosedale & Part of Berge	58	20	22

	B	Morning Glory	49	36	15
	C	Jurgens Stadium	61	26	13
3	A	Bellvue	65	32	3
	B	Part of Progress & Rainbow	35	50	15
	C	Extension, Lemoendraai & Kameelmond	34	32	14
4	A	Part of Progress	41	26	33
	B	CBD & Stasiekamp	63	25	12
	C	Flats	89	2	9
5	A	Louisvaleweg	35	49	16
	B	Rural Area SAD to Gifkloof	97	3	0
6	A	Pabellelo North	61	15	24
	B	Paballelo North Central	44	24	32
7	A	Pabellelo South Central	56	17	27
	B	Pabellelo South	42	12	46
8	A	Die Rand, Modesta Flats & Dekotaweg	80	13	7
	B	Florapark, Diedericks Flats & Blydeville	83	9	8
	C	Oosterville & Part of Middelpos	89	9	2
9	A	Part of Middelpos & Keidebees	87	9	4
	B	Rural area Uap & North of Gariep River	78	22	0
10	A	Millennium Formal & Informal	44	32	24
11	A	Kalksloot	37	40	23
	B	Raaswater	8	22	70
	C	Louisvale	16	43	41
	D	Rural Area Brug to Raaswater	90	9	1
12	A	Leseding	29	14	57
	B	Ntsikelelo	19	38	43
	C	Leerkrans	71	6	23
	D	Karos	38	30	32
	E	Lambrechtsdrift	33	25	42
	F	Rural Area Gifkloof to Lambrechtsdrift	98	0	2
A	1	Institutional	-	-	-

(Source: Macroplan, 2008)

The level of satisfaction is generally higher in the urban areas, i.e. Upington and Louisvaleweg, than in the rural areas. Approximately 33% of people residing in Progress (Ward 4a) and 46% of people residing in Pabalello South (Ward 7b) are not satisfied with the general infrastructure and service delivery. Residents not satisfied with their quality of life in Ward 6 and 7 combined, represent approximately 30%. The key areas where households are not entirely satisfied with the general infrastructure and service delivery are Morning Glory (Ward 2b), part of Progress and Rainbow (Ward 3b) (Macroplan, 2008).

The figures provided in Table 8 indicate that the provision of infrastructure and service delivery to the rural areas is not of an acceptable standard according to the relevant inhabitants. All the rural settlements indicated their dissatisfaction with their quality of life. Attention must be therefore given to the development of these areas in municipal planning policy and development projects (Macroplan, 2008).

The five aspects that households in both the urban and rural area of //Khara Hais listed as priority in order to enhance their living conditions are (Macroplan, 2008):

- The provision of adequate housing
- Eradication of poverty and unemployment
- The provision of sanitary facilities and sewage removal services
- The provision and maintenance of roads and streets of an adequate standard
- Provision of potable water and general water reticulation

7.2.2. SERVICE STANDARDS: HOUSING PROVISION

According to the 2001 census data, there are 17 601 households present in the Municipality. Of these households, approximately 79% live in formal dwellings, whilst 18% live in informal dwellings (refer to the table below).

Table 9: General housing information.

	Total Households	Total Formal Dwellings[18]	% Formal Dwellings	Total Informal Dwellings[19]	% Informal Dwellings
TOTAL	**17 601**	**13 843**	**79%**	**3 295**	**18%**

(Source: SA Census, 2005)

** Please note that 9 respondents indicated that they lived on a private ship/boat whilst an amount of 454 is Not Applicable (Institutions).

The accurate long-term planning and development of housing projects are hindered by the discrepancies in the estimates portraying the current housing situation. There are vast differences between the 2001 Census estimates, the 2007 //Khara Hais IDP and the 2007 Community Survey. The //Khara Hais IDP (2007) summarises the housing situation as follows:

TYPE	NUMBER	PERCENTAGE
On-farm	**788**	**5%**
Flats	**247**	**2%**
Town house complexes	**105**	**1%**
Informal	**3 821**	**25%**
Formal	**10 114**	**67%**
TOTAL	**15 075**	**100%**

The 2007 //Khara Hais IDP estimates that approximately 25% of households live in informal dwellings, which is a 7% increase from the 2001 Census data. The 2007 Community Survey indicates that only 16% of households lives in informal dwellings, which is a 2% decrease from the 2001 Census data and 9% less than the Municipality estimated.

[18] This number includes:
- House or brick structure on a separate stand or yard;
- Flat in block of flats;
- Town/cluster/semi-detached house (simplex, duplex, triplex);
- House/flat/room in back yard, and
- Room/flatlet not in back yard but on share property.

[19] This number includes:
- Traditional dwelling/hut/structure made of traditional materials;
- Informal dwelling/shack in back yard;
- Informal dwelling/shack not in back yard, and
- Caravan or tent.

The 2008 Socio-Economic survey did not differentiate between formal and informal dwellings, but classified dwellings in accordance with the building material used to construct the dwelling[20]. According to the 2008 Survey approximately 27% of all main dwellings and 67% of all additional dwellings are constructed of sink, wood or thatch.

The 2004 IDP of //Khara Hais states that the total housing unit requirement (stands or structures) is approximately 4 000 units. The greatest need is experienced by young adults who still reside with their parents due to the lack of affordable housing. This need is increased by students who require accommodation. The vast majority of those requiring housing need subsidised housing (81.2%). This is followed by the need for flats or student accommodation (10.9%). Only 6.3% of the housing need pertains to smaller economic stands measuring about 500m^2 and the remaining 1.6% to large economic stands (//Khara Hais IDP, 2004).

Furthermore, according to the 2008 Socio-Economic Survey there is a significant occurrence of moving around within Upington itself, something that is reflected in the average number of years that a person remains in one house, namely 13.2 years. In contrast to this, the average number of years that a person remains in the region is 23.8 years, a clear indication that there is much reshuffling within the region itself (Macroplan, 2008).

Due to the discrepancies between the various surveys and the fact that the Municipality estimated its housing needs as far back as 2004 it is important that a detailed housing survey be undertaken and that national, provincial and local government spending on housing be adjusted in accordance with the findings of such survey (Macroplan, 2008).

7.2.3 SERVICE STANDARDS: SEWAGE REMOVAL

In 2001 approximately 4 000 households in //Khara Hais did not have access to water borne sanitation. This figure represents 22.54% of the total number of households in the Municipality.

According the SA Census 2005 statistics, approximately 77.4% of households have flush toilets and about 7% of households have no sanitation facilities (refer to the table on the following page).

[20] Classified in accordance with
a) Building material used for main dwelling's walls –
- Brick
- Sink
- Thatch
- Wood
- Other

b) Building material used for main dwelling's roof –
- Sink
- Tiles
- Asbestos
- Other

Table 10: Standard of Sewage Removal.

	SEWAGE REMOVAL Sanitation availability per Household					
	Flush	Pit Latrine	Bucket Latrine	None	Chemical	Total Household
TOTAL	13 634	1 381	1 170	1 239	177	17 601
%	77.46%	7.85%	6.65%	7.04%	1.0%	100%

(Source: SA Census, 2005)

The 2007 Community Survey indicates that only 5.3% of households have no toilet facilities, which illustrates the progress the Municipality has made in providing sanitary facilities. A decrease in the amount of households making use of a pit latrine system (6.8%) is also noted. However, 9% of households make use of the bucket system, which represents an increase of more than 2%. This could be attributed to the influx of informal dwellers and the fact that a number of households which had no toilet facilities now make use of a bucket system.

Considered in context of the commitment of South Africa at the World Summing on Sustainable Development (WSSD) in 2001 to eradicate all bucket systems in all identified areas, the Municipality has made some progress with a decrease of 1% in the number of households making use of the bucket system, which is now at 8%. At the WSSD it was indicated that all bucket systems should be replaced with either flush toilets or ventilated improved pit latrines (VIP). //Khara Hais Municipality has provided VIPs to 5% of all households while 79% have access to a flush toilet system. These figures indicate a marked improvement in the provision of sewage removal facilities.

7.2.4 SERVICE STANDARDS: WATER RETICULATION

According to the Census data, almost 80% of households have access to running water either by means of water points situated on their erven (39.14%) or from taps within their dwelling (38.63).

Table 11: Standard of Water Reticulation.

	WATER RETICULARION Number of Households with Access to Running Water					
	No Access to Piped Water	Water Dwelling (tap)	On Site/Yard (tap)	Public tap <200m	Public tap >200m	TOTAL
TOTAL	372	6 798	6 889	1 551	1 989	17 599
%	2.11	38.63	39.14	8.81	11.30	100%

(Source: SA Census, 2005)

Approximately 87% of households rely on a regional or local water scheme as their source of potable water with the remaining households relying on boreholes, natural springs, dams, rivers and water vendors for their supply of water. Lambrechtsdrift, Leerkrans, Karos, Raaswater and Louisvale are the only smaller settlements that have their own water purification plants. Other inhabitants are responsible for their own water provision.

According to the 2007 Community Survey //Khara Hais Municipality has worked hard at providing households with access to running water from within their dwellings. Approximately 56% of households now have running water in their dwellings. Access to water by means of water points situated on their erven have decreased slightly to 37%, whilst only 3.5% of households have to make use of a public tap which is outside their erven (16% decrease).

Notwithstanding its success, the Municipality has identified the following weak points and possible threats to the existing water system:

a) Not all water use is metered by individual water meters on each erf.
b) The water distribution system is a single system because water is pumped via the distribution network to reservoirs.
c) Poor distribution of storage capacity (too much in the Keidebees reservoir).
d) The age of some pipes causes regular breakages and these pipes need to be systematically replaced.
e) Stricter legislation with regard to the availability and management of water resources.
f) Increasingly poor raw quality in the Gariep River could cause costs to rise.
g) No guidelines pertaining to water infrastructure provision for developments outside of Upington which cannot be linked to the central reticulation system.

7.2.5 SERVICE STANDARDS: ROADS AND STREETS

The main access routes to //Khara Hais Municipality are the national roads (N14) via Pofadder/Kakamas in the west, the N10 via Prieska in the south and the N14 via Kuruman. Regional roads include the R27 via Kenhardt in the south and the R360 from the north via the Kgalagadi Transfrontier Park.

The internal routes in Upington are generally of an adequate standard and are well maintained. The internal road network within Upington CBD is tarred, whilst a number of residential areas are serviced by gravel roads. According to the 2008 Socio-Economic Survey approximately 47% of roads are tarred, with 51% gravel roads. Some areas, which include amongst others, Pabellelo, Rosedale and Vaalkroek, are characterised by very informal gravel roads which need to be upgraded to an acceptable standard.

Upington is characterised by a high volume of heavy vehicles due to the fact that the town is situated on the convergence point of various important transport routes and its large manufacturing and industrial component. This may influence the long term maintenance of the key through-routes and it contributes to the traffic congestion experienced in the CBD.

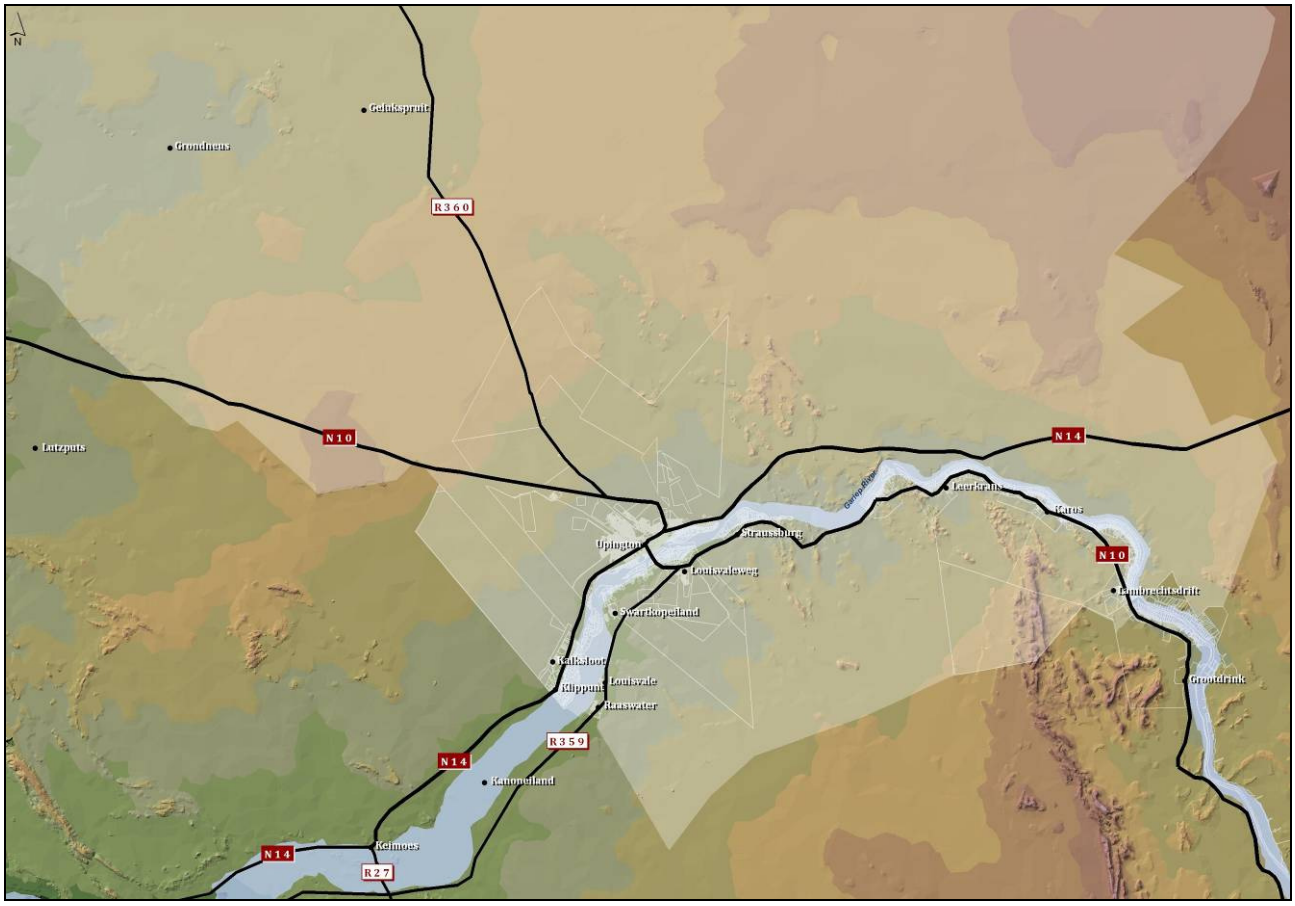


Figure 12: Roads in //Khara Hais Municipality.

7.2.6 SERVICE STANDARDS: REFUSE REMOVAL

The majority of households in //Khara Hais have access to refuse removal, either by the Municipality or by their own arrangements. Almost 87% of households are serviced by the Municipality either once a week (82.75%) or less often (4.03%). Approximately 12% of households in //Khara Hais make their own arrangements with only 1.27% that has no access to refuse removal services at all.

Refuse is disposed of at the Dunes Landfill site, located on the road to Keimoes and at a smaller site at Leerkrans. The waste disposed at the Dunes Landfill site is compacted daily and covered with sand in accordance with permit conditions. It has adequate space for at least another 20 years (Siyanda EMF, 2007).

Table 12: Status of Refuse Disposal Services.

REFUSE DISPOSAL Number of households with access to refuse disposal services		
Local Authority (Once a Week)	14 565	82.75%
Local Authority (Less Often)	710	4.03%
Communal Refuse Dump	11	0.06%
Own Refuse Dump	2 091	11.88%
No Refuse Disposal	223	1.27%
TOTAL	**17 600**	**100%**

(Source: Census, 2005)

According to the 2007 Community Survey the Municipality has increased their service provision with regard to refuse disposal with 8%. Some 94.8% of households now have access to refuse removal either by the Municipality or through a private company. Only 1% of households must still be provided by some form of refuse disposal. This is confirmed by the 2008 Socio-Economic Survey which indicated that 93% of households have access to refuse removal services. The number of households that must still be provided with some form of refuse disposal has however increased to 3%.

7.2.7 SERVICE STANDARDS: ELECTRICITY

Statistics South Africa differentiates between the percentage of households using electricity for lighting, cooking and heating. In 2001 approximately 76% of households' dwellings were provided with electricity, while some 24% of households still had not have access to electricity and have to rely on candles or paraffin for lighting purposes. . It is interesting to note that not all of these households make use of electricity for cooking purposes.

Table 13: Provision of Electricity.

	ELECTRICITY Availability of Electricity for Lighting, Cooking and Heating					
	LIGHTING		COOKING		HEATING	
Energy Source	Households	%	Households	%	Households	%
Electricity	13 318	75.67	11 643	66.15	11 508	65.38
Gas	68	0.39	1 361	7.73	366	2.08
Paraffin	942	5.35	2 507	14.24	1 244	7.07
Candles	3 205	18.21	/	/	/	/
Wood	/	/	1 962	11.15	3 877	22.03
Coal	/	/	26	0.15	28	0.15
Animal dung	/	/	38	0.22	38	0.21
Solar	30	0.17	34	0.19	8	0.04
Other	36	0.20	29	0.16	553	3.14
TOTAL	**17 599**	**100%**	**17 600**	**100%**	**17 602**	**100%**

(Source: Census, 2001)

The 2007 IDP indicates that the Municipality has increased the provision of electricity so that 93% of households now have access to electricity. This confirms the estimate of the 2007 Community Survey, which also indicates that 93% of households make use of electricity for lighting purposes. More households now make use of electricity for cooking and heating purposes (88% and 76% respectively).

The 2008 Socio-Economic also indicates an increase of 1% in the number of households that have electricity in their dwellings (i.e. 94%).

7.2.8 SERVICE STANDARDS: HEALTH SERVICES

Health services in //Khara Hais are provided by National Government, the Northern Cape Provincial Government, Siyanda District Municipality, //Khara Hais Local Municipality and the private sector.

The Siyanda District Municipality identified illiteracy and poverty as the key factors affecting the standard of health of the community. Malnutrition, especially amongst children, are prevalent and, according to the District Municipality, it is a result of lack of income to buy adequate and nutritious food and parents, specifically mothers, being illiterate and not understanding the value and importance of ensuring that children eat healthily (Siyanda District Municipality IDP 2007/8 – 2011/12).

//Khara Hais Municipality has identified a number of health challenges in their 2007 IDP, namely:

a) Shortage of qualified staff personnel.
b) Increase in HIV/AIDS and TB.
c) Increase in Fetal Alcohol Syndrome.
d) Teenage pregnancy.
e) Lack of safety of mobile clinics.
f) Upgrading of mobile clinic vehicles.

Detailed information regarding the standard of health services in the Northern Cape Province, and //Khara Hais in particular, are however lacking, especially regarding the prevalence of HIV/Aids infections and the impact of HIV, AIDS and TB on health care resources and ultimately the economy of the province. The Northern Cape Department of Health discussed this matter at its first Community Health Worker Summit in March 2007. According to the Department the province has now progressed from an early HIV epidemic into one of which the full impact of morbidity is beginning to be felt and that at the same time, the health system is becoming massively overburdened. The Department foresee that the burden of HIV/AIDS will increase substantially over the next few years as more of the population becomes symptomatic requiring numerous hospital admissions and primary health care consultation. Although the Siyanda District has the second lowest prevalence rate of HIV in the Northern Cape at 12.64%, it is important to note that this rate is increasing every year (Department of Health Vision 2014 – 10 Year Strategy, 2006).

It is therefore of the utmost importance to determine the prevalence rate of HIV/AIDS in //Khara Hais in order to ensure that the Municipality's long-term health care plan and infrastructure will be able to adequately handle the impact of the virus and its syndrome.

7.2.9 SERVICE STANDARDS: SAFETY AND SECURITY

The //Khara Hais IDP (2004) describes Upington as a relatively safe area. The safety and crime challenges include vandalism, family violence, smuggling of illegal substances and alcohol and drug related violence. An information crime sheet for Upington Police Station for April to September 2001 to 2007 summarises the crime rate as follows (refer to the table on the following page).

Table 14: Crime statistics for Upington (April to September 2001 to 2007).

	Apr - Sep 2001	Apr - Sep 2002	Apr - Sep 2003	Apr - Sep 2004	Apr - Sep 2005	Apr - Sep 2006	Apr- Sep 2007
Murder	21	28	5	6	9	9	4
Attempted murder	68	84	20	18	15	18	15
Rape	30	47	15	23	21	27	26
Indecent assault	6	13	5	11	11	8	9
Assault with the intent to inflict grievous bodily harm	653	707	295	316	299	247	246
Common assault	149	243	112	105	100	82	78
Common robbery	151	181	64	69	51	42	43
Robbery with aggravating circumstances	42	7	17	17	15	12	11
General aggravating robbery (subcategory of aggravated robbery)	-	4	16	16	15	11	11
Carjacking (subcategory of aggravated robbery)	0	1	1	1	0	0	0
Truck hijacking (subcategory of aggravated robbery)	0	0	0	0	0	0	0
Robbery at residential premises (subcategory of aggravated robbery)	-	2	0	0	0	1	0
Robbery at business premises (subcategory of aggravated robbery)	-	0	0	0	0	0	0
Robbery of cash in transit (subcategory of aggravated robbery)	0	0	0	0	0	1	2
Bank robbery (subcategory of aggravated robbery)	0	0	0	0	0	0	0
Arson	10	12	4	4	4	8	4
Malicious damage to property	194	198	75	104	81	90	98
Burglary at residential premises	238	289	126	165	153	222	124
Burglary at business premises	120	102	65	96	82	98	101
Theft of motor vehicle and motorcycle	13	29	16	9	15	8	12
Theft out of or from motor vehicle	214	261	197	118	118	142	88
Stock-theft	91	86	65	44	38	37	55
Illegal possession of firearms and ammunition	6	8	2	6	6	0	8
Drug-related crime	181	67	72	66	32	21	38
Driving under the influence of alcohol or drugs	80	63	24	87	37	50	115
All theft not mentioned elsewhere	916	849	497	469	287	291	315
Commercial crime	66	60	49	70	35	23	32
Shoplifting	269	224	222	235	217	254	240
Culpable homicide	7	13	7	13	7	8	9
Kidnapping	0	2	1	3	0	0	0
Abduction	1	2	0	1	0	2	0
Neglect and ill-treatment of children	3	9	6	2	0	1	2
Public violence	1	3	0	0	0	0	0
Crimen injuria	28	48	46	41	32	26	25

(Source: SAPS, 2007)[21]

[21] SAPS, 2007: Crime Information Analysis Centre – SAPS. Gordonia: Upington Station.

Table 14 indicates that serious crime such as murder and attempted murder has decreased since 2001, although the rape statistics stay constant. Prevalent crimes in the Upington area include 'assault with the intent to inflict grievous bodily harm', 'burglary at business and residential premises', 'theft out of or from motor vehicles', and 'shoplifting.

7.2.10 SERVICE STANDARDS: SPORTS AND RECREATION

Access to sport, recreation and cultural facilities, e.g. museums and theatres are important aspects of the community's well-being. Upington is the centre of the sport and recreation activities of //Khara Hais Municipality. The following recreational facilities exist in the Municipality:

a) Formal Sports Fields

Public open areas and vacant lots are also used as sports fields, especially for soccer. These occur in most neighbourhoods, rural settlements and private areas. Most of the schools have their own sports facilities for the use of their learners. Formal sports amenities and the associated sports opportunities include:

- Bellvue swimming pool (swimming).
- Danie Kuys sports ground (rugby, soccer and athletics).
- Island sports grounds (rugby, netball, tennis and bowls).
- Kalksloot (soccer and netball).
- Oranje sports complex (rugby, soccer, netball, tennis, jukskei and gymnasium).
- Paballelo sports grounds (soccer, athletics, netball, and basketball).
- Paballelo swimming pool (swimming).
- Raaswater sports grounds (soccer).
- SC Kearns (rugby, soccer, and netball).
- Town swimming pool (swimming and aerobic exercises).
- Unievelde (rugby, soccer, tennis, netball, hockey, cricket, golf and pistol shooting).
- Upington Golf course (golf and squash).

b) Parks

The following parks have playground equipment for recreational purposes for children:

- Disa Park.
- Hospital Park.
- Kalksloot.
- Kameeldoring Park.
- Koen Park.
- Lambrechtsdrift.
- Leerkrans.
- Louisvale Road.
- Louisvale Town.
- Morning Glory.
- Paballelo.
- Progress.
- Rosedale.
- Sentrum Park.

c) Community facilities

In the Kalahari Shopping Centre there are four film theatres with a capacity of 600 seats. A number of community halls occur throughout the Municipality, namely:

- J Shimane Hall.
- Kalksloot Community Hall.
- Karos Community Hall.
- Lambrechtsdrift Community Hall.
- Louisvale Road Community Hall.
- New Community Hall.
- Progress Civic Hall.
- Raaswater Community Hall.
- Rosedale Community Hall.

8 ECONOMIC ENVIRONMENT

8.1 SOCIO-ECONOMIC STATUS

The Northern Cape has the third highest Human Development Index (HDI) compared to South Africa's other provinces. The HDI provides an alternative method to measure the relative socio-economic development of an area and is seen as a measure of people's ability to live a long and healthy live, to communicate, to participate in the community and have sufficient means to be able to afford a decent living[22].

In 1996 Statistics South Africa calculated the HDI for the Northern Cape at 0.68, which shows a slight decrease compared to the index of 0.70 as calculated for 1991. It is also slightly lower than the national average of 0.69 (Human Development Index [P0015], 2001)[23].

At the Siyanda District Growth and Development Summit (February 2007) the HDI for the District Municipality was indicated as 0.54, which is significantly lower than the Northern Cape Province HDI[24]. Areas with an HDI of between 0.5 and 0.8 are considered to have a medium level of human development. The HDI of the Siyanda District Municipality is however a concern although it is above 0.5, and must be addressed.

It is imperative that the illiteracy and functional level of communities be addressed. Functional illiteracy is indicative of an inability to understand abstract information and usually occurs when a person has completed less than seven years of formal education and at least passed grade seven. According to Table 15, 16% of the population of the Municipality is functionally illiterate while 7% are completely illiterate. This is directly connected to low income levels and will push the HDI

[22] The Human Development Index (HDI) was developed by the United Nations Development Programme (UNDP) based on the philosophy that the goal of development was to ensure that individuals live long, informed and comfortable lives. The HDI consists of three components:
- Longevity, which is measured by life expectancy at birth.
- Educational attainment, which is measured by two education variables, namely adult literacy and combined gross primary, secondary and tertiary enrolment ratio.
- Income, which is measured by gross domestic product (GDP) per capita.

[23] www. Statssa.gov.za

[24] Creamer Media (Pty) Ltd. Peters: Siyanda District Growth and Development Summit. www.polity.org.za

further down if this is not attended to. A total of 19.31% of the population has some secondary education, while only 11.65% have completed Grade 12.

Table 15: Literacy and Education Levels.

	LITERACY LEVELS	
	TOTAL	%
% Totally Illiterate	5 285	6.98%
% Functional Illiterate	12 059	15.91%
Some secondary	14 613	19.31%
Complete Grade 12	8 821	11.65%
Higher Education	2 467	3.26%

(Source: Census, 2005)

As indicated in Section 7.1.1 a third of the population in //Khara Hais is under the age of 15 years. This section of the population will become economically active within the next 5 to 10 years and education will be a key requirement to ensure a good quality of life. The 2008 Socio-Economic Survey indicates that approximately 25% of the population has an educational level of between Grades 8–10, while 24% has between Grades 11-12 and only about 4% has any form of tertiary education. These percentages, especially those that have completed Grade 12 have increased significantly since 2005, indicating a growth in the average educational level.

It is recognized that poverty[25] remains the core obstacle to a stable and prosperous future in South Africa. This applies to //Khara Hais as well. Despite commendable efforts of government, and state-supported efforts, poverty continues to be a chronic problem for much of South Africa's population. There problems are also evident in //Khara Hais.

The Labour Market[26] constitutes 63% of the total population of //Khara Hais (47 843). Only 24% of the Labour Market is employed, with the unemployment rate at 13%. The *not economically active*[27] people constitute 26% of the Labour Market. The unemployment rate of 13% could therefore be somewhat misleading due to the fact that people not seeking work, which can be classified as unemployed people, are not included.

Table 16: Census Employment Status.

	EMPLOYMENT STATUS		
	Employed	Unemployed	Not Economically Active
Total Individuals	**18 231**	**9 877**	**19 735**
% of Total Population (75 671)	**24.09%**	**13.05%**	**26.08%**

(Source: Census, 2005)

[25] Poverty is defined as the inability to attain a minimal standard of living, measured in terms of basic consumption needs or the income required to satisfy them. Poverty means the alienation from the community, food insecurity, crowded homes, usage of unsafe and inefficient forms of energy, lack of adequately paid and secure jobs, and fragmentation of the family (Landman JP, Bhorat, Van der Berg S & Van Aardt C 2003: *Breaking the grip of Poverty and Inequality in South Africa: 2004-2014*).

[26] The Labour Market constitutes all those of working age (15 – 65 years) and include those who are employed, unemployed and not economically active.

[27] This classification includes housewives/homemakers, students or scholars, pensioners and retired people as well as those not seeking work.

The 2008 Socio-Economic Survey estimated the unemployment rate at 23%, which confirms the fact that the unemployment rate estimated by Statistics South Africa is misleading.

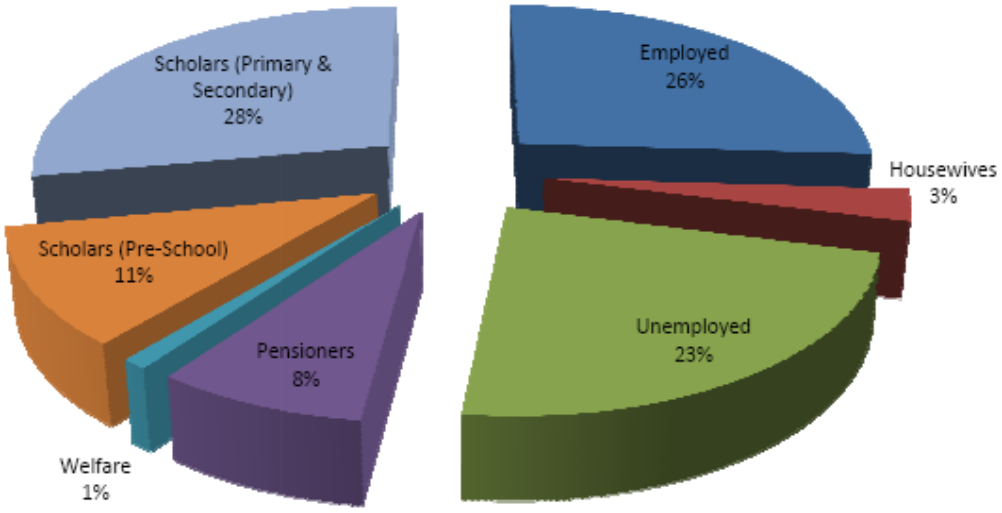


Figure 13: Socio-Economic Survey Employment Status (Source: Macroplan 2008).

Of the employed *labour force*[28] almost 19% earn less than R400 per month, whilst 55% earn between R401 and R1600 per month. Some 74% of the employed labour force thus earns less than R1600 per month and therefore live in poverty. It is important to note that the employed labour force constitutes only 24% of the total population, which implies that 76% of the people living in //Khara Hais Municipality are dependent on the income of the employed labour force. The dependency ratio of that sector of the population that live in poverty (i.e. earn less than R1600) is roughly 1:4, with a maximum of R400 per person available per month.

Table 17: Monthly Income Level.

	INDIVIDUAL MONTHLY INCOME									
	No Income	R1 - R400	R401 - R800	R801 - R1600	R1601 - R3200	R3201 - R6400	R6401 - R12800	R12801 - R25600	R25601 - R51200	R51201 or More
TOTAL	**373**	**3021**	**3451**	**3564**	**3516**	**2660**	**1172**	**299**	**107**	**68**
%	**2.04**	**16.57**	**18.93**	**19.55**	**19.29**	**14.59**	**6.43**	**1.64**	**0.59**	**0.37**

It is therefore recognized that:

a) Eradication of poverty is an imperative for sustainable development.
b) Eradication of poverty requires environmentally sustainable solutions.
c) Sustainable development requires a balance between economic growth, social development and environmental sustainability, but with the emphasis on economic growth until such time as wide-spread poverty has been successfully eradicated.
d) Rolling back poverty must go hand in hand with rolling back inequality.

[28] The Labour Force consist of people of working age (between 15 – 65 years) who are either employed or unemployed, and is also referred to as the Economically Active Population.

8.2 PRIMARY ECONOMIC ACTIVITIES

According to the 2001 Census data the Tertiary Sector provides more than 50% of the job opportunities in //Khara Hais. The *Community, Social and Personal Services* employs most people in the Municipality (i.e. 23%) followed closely by the *Wholesale and Retail Trade* sector, which employs 18% of the employed people.

Table 18: Employment per Economic Sector (Source: Census 2005).

INDUSTRY	NUMBER OF EMPLOYEES	% OF TOTAL EMPLOYEES
PRIMARY SECTOR		
Agriculture & Hunting	**2484**	**13.62**
Mining & Quarrying	**55**	**0.30**
SECONDARY SECTOR		
Manufacturing	**1273**	**7.00**
Electricity, Gas & Water Supply	**126**	**0.70**
Construction	**911**	**5.00**
TERTIARY SECTOR		
Wholesale & Retail Trade	**3394**	**18.61**
Transport, Storage & Communication	**888**	**4.78**
Financial Intermediation, Insurance, Real Estate & Business Service	**1466**	**8.04**
Community, Social & Personal Services	**4195**	**23.00**
MISCELLANEOUS		
Private Households	**1937**	**10.62**
Other & Not Adequately Defined	**3**	**0.02**
Undetermined	**1501**	**8.23**

The primary economic sectors and their key aspects are summarised below.

8.2.1 AGRICULTURE

According to the Northern Cape Provincial Growth and Development Strategy (NCPGDS, 2004-2014) agriculture is one of the mainstays of the Northern Cape provincial economy contributing 7.3% to the GGP in 2002.

The fertile land located along the Gariep River supports the production of some of the country's finest quality agricultural products. The province is a major exporter of table grapes produced along the Gariep River and is renowned for high-quality meat. The Northern Cape is also well known for the production of wool, mohair and karakul pelts as well as dates, citrus products, wine and raisins. Some of the Kalahari farms are popular for game farming, agri-tourism and hunting.

Many large companies dealing with the various agricultural industries and enterprises have their head offices in Upington.

Two major challenges currently face the agricultural sector, namely (NCPGDS, 2004-2014):

- The need to support emerging farmers.
- The need to achieve greater levels of diversification in irrigated agriculture in order to spread risk and promote the development of crops that have a high affinity for agro-processing.

The Northern Cape Provincial Government has set goals for growing the agricultural and manufacturing sectors by addressing these challenges, promoting transformation, and developing an enlarged agro-processing sector that contributes to growth in manufacturing and job-creation. In response to these goals and in compliance with the national Land Reform program, the Municipality has purchased portions of the farm *Olyvenhoudtsdrift South* (approximately 6 610 ha in size). This land will be used to provide needy, prospective farmers with grazing land (according to the management plan for the land, a total of approximately 1 750 sheep can be kept on this land). The Council has furthermore decided to rent out to prospective farmers the portion of the commonage known as *Hondejag,* in terms of the commonage reform program of government. This portion of commonage is 5 500 ha in size and can support approximately 1 600 sheep. As the need for grazing land increases, negotiations will be held with the government regarding the purchase of more land (//Khara Hais IDP, 2007).

The Northern Cape Provincial Growth and Development Strategy (2004 – 2014) states that the Northern Cape Provincial Government together with the private sector in agriculture faces the challenge of how to grow the agricultural sector and increases its contribution to employment and income while at the same time increasing access to agricultural resources by the previously excluded sections of society.

a) Wine Industry

Some of South Africa's finest horticultural produce (especially grapes) is grown in irrigation schemes along the Gariep River. In the early 1900s vineyards were planted in the Lower Gariep valley for raisin production. It was later found that the Sultana grapes could be used for the production of distilling wine. This led to the establishment of the Orange River Wine Cellars Co-op Ltd on 23 December 1965. The organisation has six depots in the area (all of them on the banks of the Gariep River at Upington, Kanoneiland, Grootdrink, Kakamas, Keimoes and Groblershoop). The wines from Orange River Wine Cellars are exported to *inter alia* Europe and the USA. The Upington area accounts for more or less 40% of South Africa's grape export.

The *Orange River Wine Route* consists of five wineries located in Upington, Kakamas, Keimoes, Grootdrink and Groblershoop respectively. Grape juice cellars operate from Kanoneiland, Kakamas and Grootdrink. The *Route* includes regular wine tours that provide an all-round experience of wine industry in Upington.

The Northern Cape Wine Region is primarily a white grape producer although reds are being planted increasingly. Some of the wine grape varieties cultivated are Chenin Blanc, Colombard, Chardonnay, Pinotage, Shiraz, Cabernet Sauvignon, Merlot, Petit Verdot, Tannat, Muscadel (both red and white) and Muscat d'Alexandrie.

Large trellising systems are employed in this region of which the hut, gable and T-trellises are the most in use. These create special microclimates which protect the grapes, allowing them to ripen away from exposure to the direct rays of the sun. Specific mesoclimates are created within vineyards located on the islands between the different streams of the Gariep River where the close proximity to the water cools down the grapes to a considerable degree. The conditions contribute to creating climate pockets which are conducive to production of better quality wines (WOSA, 2007)[29].

b) Raisin and Sultana Industry

Raisin[30] and sultana making is an important agricultural activity in the area. Most dried sultana grapes in South Africa originate from Upington's South African Dried Fruit Cooperative, which exports the produce in large volumes. The largest dried vine fruit processing and packaging plant (SAD Vine Fruit {Pty} Ltd) in South Africa is based in Upington. This plant is served by six intake deports located in Groblershoop, Mylpaal, Louisvaleweg, Keimoes, Kakamas and Vredendal (Siyanda EMF, 2007).

There are approximately 1 500 growers of vine fruit in South Africa with 90% of production clustered around Upington. Approximately 75% of the total crop is used for the cultivation of sultana grapes.

c) Medicinal Plants

The climate and availability of land makes the area suitable for the commercial cultivation of *Hoodia gordonii*. This forms part of an industry which extracts an active ingredient from the *Hoodia* plant for the production of dietary and anti-obesity substances (Peters, 2007)[31]. There is a fast-growing market for these products which is enhanced by the existence of a beta-carotene factory in Upington.

Hoodia gordonii is a spiny succulent commonly known as bobbejaan-ghaap, bergghaap, bitterghaap, bokhorings, and Khobab. The plant was historically used for various medicinal purposes by the San and other indigenous people that inhabited the Kalahari and Southern Namibia. Paterson and Colonel R.F. Gordon discovered the species in the Upington area in December 1778 (Oliver, 2005)[32].

Photograph 5: The *Hoodia gordonii* plant (Source: Oliver, 2005).

Hoodia species in the Northern Cape Province are listed as protected species under the Environmental Conservation Ordinance 19 of 1974 and no-one is allowed to harvest, collect, damage, collect seeds, trade (import or export) or transport

[29] Wines of South Africa (WOSA) 2007: http://www.wosa.co.za/.

[30] *Raisins* are dried grapes whilst *sultana* is a type of white, seedless grape of Turkish or Iranian origin.

[31] Peters D 2007: Keynote address by the Premier of the Northern Cape Province. Siyanda District Growth and Development Summit (DGDS), Upington.

[32] Oliver I 2005: *Hoodia gordonii*. Karoo Desert National Botanical Gardens. http://www.plantzafrica.com/planthij/hoodgord.htm

Hoodia material without a valid permit from the Permit Section of the Directorate of Conservation Service in the Northern Cape. Cultivation requires a permit form the same Permit Section, and any export also requires a phyto-sanitary certificate and these are obtained from the National Department of Agriculture (http://www. plantz africa.com/planthij/hoodia.htm).

8.2.2 MINING

Upington is well-known for the variety of semi-precious stones that occur in abundance at no great depth. These include beryl, amethyst, agate, tourmaline, jasper, aquamarine and tiger eye.

Small deposits of various minerals occur in the area, including zinc, copper, calcite, lead, barites, fluorspar, tungsten and amethyst. However, due to the reported small quantities these minerals are not exploited on a significant scale (Siyanda EMF 2007).

8.2.3 TRANSPORT

a) Public Transport

There is no local bus service available in Upington, but Intercape and SA Roadlink provide a national transport service. Most communities are therefore dependent upon taxis. Two taxi associations exist, namely the Siyanda Local and Long Distance Taxi Association, and Gordonia Goodhope Local and Long Distance Taxi Association. Co-operation between these two has not always been good due to the competitive nature of the industry. The Municipality has founded a taxi forum to help address the needs of both the taxi associations and their clients (//Khara Hais IDP, 2004).

In order to implement the existing approved parking and planning study, more parking levels must be provided, as well as parking and ramps for the disabled. These areas will have to be well marked with clear road signs. It is imperative that the speed limit be lowered in Upington so that a safe environment is created for motorists and pedestrians. //Khara Hais Municipality should establish the necessary infrastructure for the usage of public transport and to empower disabled people by giving them access to public transport (//Khara Hais IDP, 2005).

b) Airport Services

With the fall of the Portuguese regime in Angola, South African Airways (SAA) lost its landing rights in Luanda. As a result, the runway of Upington Airport was constructed to accommodate a Boeing 747 with a full load of passengers, cargo and fuel – allowing planes to take off for Europe without having to stop along the way. Upington was chosen because of its height above sea level (844 m), position and available land. The airport's 4900m-long runway, the longest in Africa, was built in a record seven month period in 1975. From August 1976 to December 1996, SAA used Upington as a refuelling station for two weekly scheduled Boeing 747 flights to London and Zurich. In 1996, the original fire station was converted into offices for airport management and other administrative staff (Africaspotter, 2007)[33].

The runway is long enough to land a space shuttle. About 78 tons of cargo a week is flown from Upington during the busiest months of November, December and January. Cars, fish and courier

[33] http://africa.cwsurf.de/Upington.htm - aviation and airports in Southern Africa.

parcels head for Cape Town, Kimberley and Johannesburg, as well as England, Germany and Spain. Mining equipment leaves Upington for other African countries. Approximately one million tons of grapes are flown from Upington every year and live sheep and goats pass through the airport on their way to Saudi Arabia (Siyanda EMF, 2007).

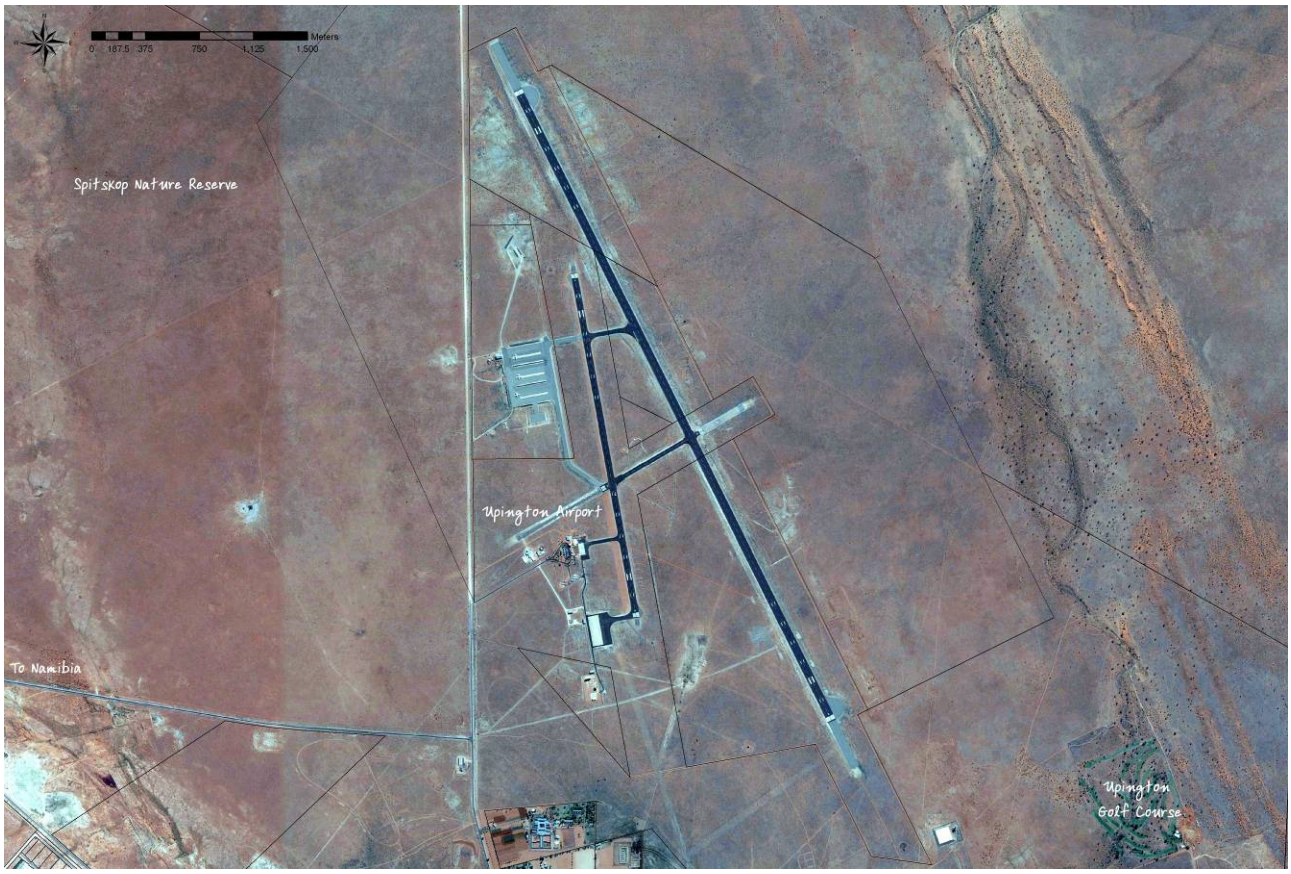


Figure 14: Aerial perspective of Upington Airport.

There are daily inland flights from Upington to Kimberley, Johannesburg and Cape Town. According to the Airports Company of South Africa (ACSA) the feasibility of upgrading of the airport to cater for the demand in international freight transport of the local table grape industry and others is being explored. The establishment of an International Development Zone (IDZ) at the airport has been proposed to further enhance its strategic importance for the local, regional and provincial economy. An adequate volume of cargo is generated in the Western and Eastern regions of South Africa and Namibia to warrant the establishment of a cargo hub at Upington.

ACSA has identified Upington as an alternative or supplement for Oliver Tambo Airport for cargo traffic. The benefits for cargo airlines and importers and exporters would be greater when using Upington Airport, as there is less congestion and quicker airport turnaround times, shorter-to-market timeframes which would enhance product freshness by one day, and improved supply-chain performance. It is also envisaged that, once a regular service by a reputable airline is established, many new projects will start up and many existing commodities will grow in volume. In particular, meat exports from will increase substantially, with Namibia possibly also making use of this port (Davenport, 2006)[34].

[34] Davenport J 2006: Study finds that a cargo hub at Upington would boost Northern Cape economy. *Engineering News (on-line article)* 2 June 2006. www.engineeringnews.co.za

ACSA has initiated a project for the establishment of an aircraft maintenance and storage service. As part of this service aircraft can be parked in circumstances similar to those in dry Middle Eastern countries and the Arizona desert. Such aircraft will be maintained for future use or stripped for the recycling of spare parts.

c) Railway Services

Upington is the location of rail connections to Karasburg in Namibia and Keimoes and Kakamas due west of Upington. There is also a connection to De Aar in the south which, in turn, links to railways to Johannesburg, Kimberley and Cape Town.

Within Upington there is approximately 12 km of internal side-lines connecting local industries to the national rail system. Presently the rail system is mainly used for the transport of goods, although there is a private train that provides a passenger service on a weekly basis between Upington and various centres in Namibia (//Khara Hais IDP, 2005).

8.2.4 MANUFACTURING

The manufacturing sector employs approximately 7% of the total workforce. Although there are a large variety of industries, there is a shortage of manufacturing industries and consideration should be given to incentives to encourage the establishment of such activities (//Khara Hais IDP, 2004).

The manufacturing sector is dominated by the food and beverage industry in Upington. Most manufacturing that takes place involves value-addition to the agricultural raw material output of the Northern Cape or the fabrication of intermediate products used in those industries. There is significant scope for growth in certain economic sub-sectors, particularly, if conditions conducive to increased investment in manufacturing can be created through institutional support and reform.

Both industrial areas to the north-west of the town (Updustria and Laboria) have railway facilities. Although growth in these two areas has taken place gradually over a long period, the premises in Updustria are used to a 90% capacity, while in the case of Laboria 74% of premises are used. Over the past year, further expansion has taken place in the industrial sector, especially in Laboria.

The primary industries in Upington include KWV, Orange River Wine Cellars, SASKO, Stellenbosch Farmers Winery, SABCO, Federated Timbers and Bouno, Gordonia Refrigeration Services, etc. Agro-processing such as date and raisin processing, citrus production vegetables, wine-making, etc. forms the largest part of the manufacturing sector.

8.2.5 ENERGY PRODUCTION

Upington is regarded as one of the most ideal places on the planet for the utilisation of solar power to generate electricity (Bohlweki Environmental, 2006). Due to the fact that Upington offers one of the world's best solar resources the first major social energy initiative on the African continent will be constructed by ESKOM in //Khara Hais Municipality (refer to Figure 15). ESKOM estimated that by constructing a Concentrated Solar Power (CSP) plant in the area South Africa could produce the lowest-cost solar electricity in the world to date. A 100 MW CSP plant is to be

built in order to supplement the ever increasing electricity demand in South Africa by delivering electricity to the national transmission network.

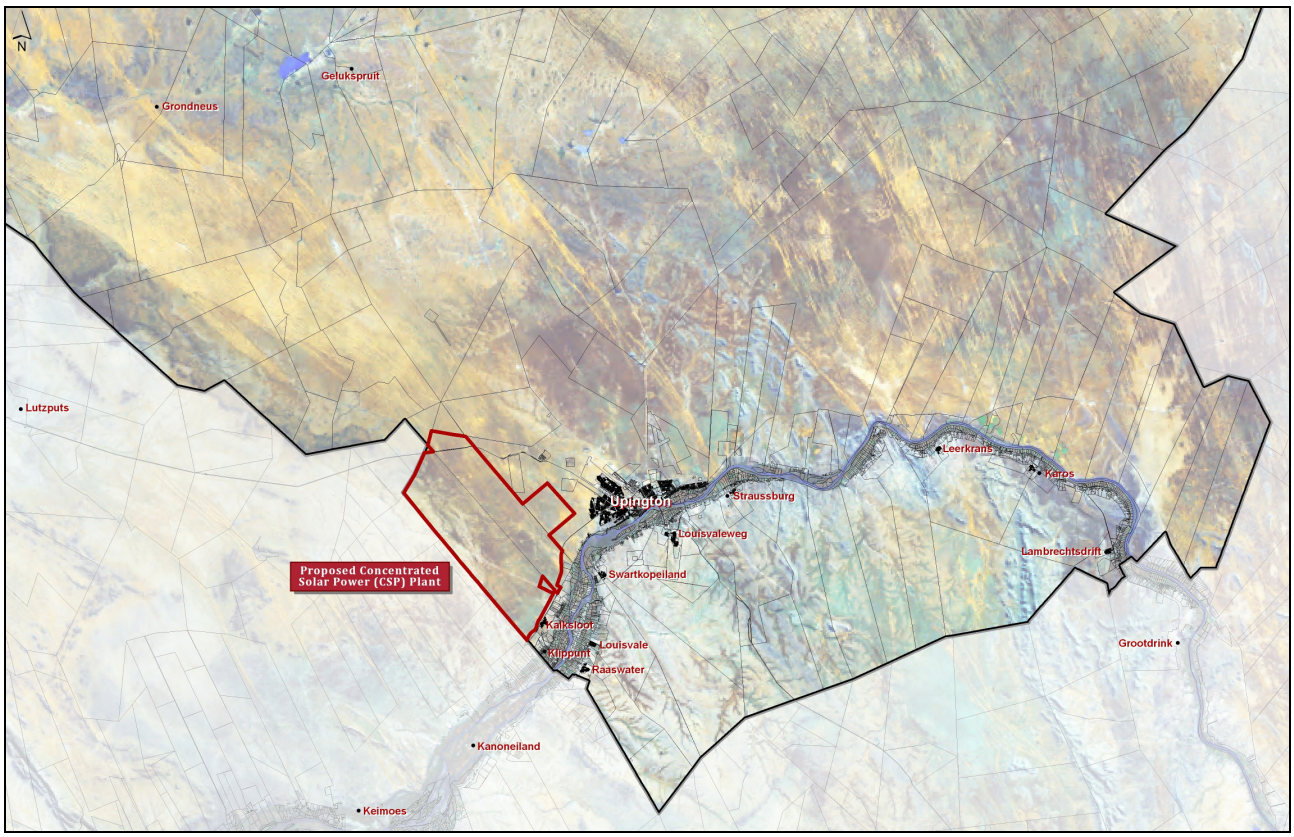


Figure 15: Location of the 100 MW Concentrated Solar Power (CSP) Plant to be built by ESKOM.

The CSP plant is a type of solar furnace using a tower to receive the focused sunlight. It uses an array of flat, movable mirrors (called heliostats) to focus the sun's rays upon a collector tower with a central receiver (i.e. the target). This receiver is in essence a heat exchanger which absorbs the concentrated beam radiation, converts it to heat and transfers the heat to the working fluid (i.e. molten salt) which is in turn to generate steam for conventional power generation (Bohlweki, 2006).

The exact impact that such a CSP plant will have with regard to job creation, housing needs, etc. is not yet known. Such detail information will be obtained from ESKOM once the detail of the project has been finalized. It is however envisaged that such a large scale development project will definitively have some positive impacts on the economy of the area and it will also have direct implications for the provision of adequate housing.

Photograph 6: Example of a power plant using central receiver technology (Source: NREL).

8.2.6 TOURISM

Tourism has been identified as one of sectors by the Municipality that needs to be developed. Upington is regarded as *inter alia* the 'oasis of the Kalahari' and the 'gateway to the Green Kalahari' (defined as *a fertile place that offers travellers protection, a restful and pleasant stopping place; a place to stock up on essentials, such as fuel and food stuffs*).

Tourism is potentially one of the most important economic sectors in the Northern Cape, and in //Khara Hais. Tourism is globally recognised as a primary creator of employment. As such, the development of the industry in //Khara Hais will significantly enhance local economic development.

a) Eco-Destinations

//Khara Hais is located in the Green Kalahari Region in which there are two important conservation areas, namely Kgalagadi Transfrontier Park and the Augrabies Falls National Park.

A small local authority game reserve, namely Spitskop, is located 13 km north of Upington. Spitskop was proclaimed a nature reserve on 30 October 1967. It is 5 641 ha in extent of which approximately 3 000 ha are open to visitors. The reserve derives its name from the prominent granite hill or *koppie* close to the entrance to the reserve.

Photograph 7: Spitskop Nature Reserve (Source: DMP, 2007).

According to history, this *koppie* became famous in 1914/1915[35] when Commander Stadler of the Rebellion was mortally wounded during a raid that moved from Spitskop towards the town.

Larger mammals such as Eland, Oryx, Wildebeest, Springbok, Blesbok, Zebra, Camel and Steenbok occur in Spitskop. A variety of smaller mammals and bird species occur, including Ostrich, Goshawk, Fiscal Shrike and Sandgrouse. The nature reserve offers basic tourist accommodation, walking trails, 37 km of gravel roads, and number of public picnic areas.

The nature reserve is currently managed in terms of a lease agreement. It is not utilised anywhere near its full potential as a tourist destination. The long-term future thereof should therefore be addressed by the Municipality.

[35] Rebellion of 1914/1915: It refers to the South Africans that supported Germany in the First World War. A number of South Africans (especially Afrikaners) were opposed to fighting for Britain against Germany which has been sympathetic to their struggle in the Anglo-Boer War. These anti-Britain supporters were known as rebels and supported the Germans of South West Africa when South Africa invaded the country during the First World War.

b) Public Resorts

A major tourist destination in Upington is *Die Eiland* Holiday Resort. The aim of this Municipal resort is to provide holiday accommodation and recreational opportunities to tourists and citizens of //Khara Hais. *Die Eiland* Holiday Resort is located on the south bank of the Gariep River directly opposite the CBD of Upington. The resort consists of 60 chalets, group accommodation and 90 caravan or tent stands. It has a total of 250 beds and the group accommodation can accommodate 42 persons. The caravan stands are equipped with electricity. There are adequate ablution facilities in the caravan park.

The Island is renowned for its *palm avenue*. This avenue was planted in 1935. It consists of more than 200 trees stretching over approximately 1 000 meters. The avenue was declared a national monument in 1982. It is said to be one the longest and densest palm avenues in the southern hemisphere.

A potentially attractive and viable tourist destination is the Gordonia Resort. This resort is however in need of significant upgrading and appropriate management. The Reitz Park public resort is also totally under-utilized and in need of upgrading. These venues could be the subject of innovative public-private partnerships.

A primary shortcoming is inadequate access to the Gariep River for tourists. Angling and other river-related recreational activities are popular with the inhabitants and represent a significant potential tourist attraction and resource. Furthermore, the maintenance of the integrity of the river and its riparian zone is hampered by the lack of a zoning plan and recreational land use guidelines.

c) General Amenities and Opportunities

A broad spectrum of tourist amenities and opportunities occur, namely:

a) Agri-tourism opportunities providing insight into vineyard farming, processing of agricultural products, wine-making, etc.
b) Conferencing.
c) Culture tourism presented in Paballelo.
d) Holiday accommodation in the form of approximately 50 registered guest houses, bed-and-breakfast facilities and over-night facilities, and two hotels.
e) River-based eco-opportunities such as ‘Sakkie-se-Arkie’.
f) Various lodges outside of Upington, including Gariep Lodge, Uizip Resort and Kalahari Lodge.

The testing of motor vehicles in the area holds huge benefits for the tourism sector. Major car manufacturers bring their cars and commercial vehicles to Upington for testing in the extreme climatic conditions. There are very few places in the world where such conditions occur and where accessibility is ensured by long distances of good quality tarred roads and the airport facilities. A further important attribute in this regard is the availability of support facilities in the form of service centres and qualified mechanics.

d) Festivals

//Khara Hais has a variety of industries and activities and this has given rise to a number of festivals, including the following:

a) Kalahari Kuierfees (originally known as the SAD Raisin Festival) is held every year in the first week of September. This popular festival is held over four days and attracts more than 35 000 visitors. Die Eiland Resort is the main venue and attractions include firework shows, artistic and drama shows, theatre productions, sport activities, food and wine stalls, etc.

b) Upington Landbou Skou (i.e. Northern Cape Expo) is an annual event held in the first week of May. It includes well-known South African artists, variety of music, hundreds of stalls, food, sport activities such as a half-marathon, cycling, badminton, etc.

c) Orange River Young Wine Show which is held in September primarily to showcase the different wines of the area.

Photograph 8: Boat cruises on the Gariep River are a popular tourist activity (Source: DMP 2007).

8.2.7 SERVICES SECTOR

The services sector includes all activities that relate to professional, government and financial services and collectively accounts for 31% of the total employment in the area.

Upington is the regional service centre and hub for government-related services, banks, shopping malls, schools, higher order educational and health facilities.

SECTION C: PLANNING APPROACH

SECTION SYNOPSIS

This section describes the planning approach adopted for the preparation of this SDF, namely the bioregional planning approach, and the mechanism applied for land-use classification of //Khara Hais Municipality, namely the *Spatial Planning Categories*.

9 BIOREGIONAL PLANNING

International experience has shown that biodiversity conservation is a prerequisite for sustainable development, and that for biodiversity conservation to succeed, the maintenance of environmental integrity (as defined by ecological, economic and social criteria) must be one of the primary determinants of bioregional delimitation and land-use planning. This view has, during the past decade, evolved into a planning and management approach generally known as bioregional planning, which is increasingly being employed as a management system by, amongst others, United Nations Environmental Program (UNEP) and the World Resource Institute (WRI) to promote sustainable development practices world-wide.

Bioregional planning is defined as '*planning and land management that promote sustainable development by recognising the need for a balanced relationship between environmental integrity, human well-being and economic efficiency, and to give effect and recognition thereto, within a specific geographical area, the boundaries of which were determined in accordance with environmental and social criteria'* (Manual for Bioregional Planning in the Western Cape, PGWC 2003)[36].

In practical terms, bioregional planning refers to the 'matching' of human settlement and land-use patterns with the parameters of ecological systems, and the planning, design and development of the human-made environment within these parameters in a manner that ensures environmental sustainability.

The above definitions imply that the relationship between the three imperatives for sustainable development, namely environmental integrity, human-well-being and economic efficiency should be recognised in a balanced and integrated manner in the context of a specific place, and never as stand-alone issues in general terms.

In this regard, bioregional planning implies an integrative concept, one that amalgamates the learning and perspectives of several similar concepts, such as ecosystem management and biosphere reserve planning. It is '*an organised process that enables people to work together, think carefully about the potential and problems of their region, set goals and objectives, define activities, implement projects, take actions agreed upon by the communities, evaluate progress and refine their approach*' (Miller, 1996)[37].

[36] PGWC. 2003: *Manual for the application of bioregional planning in the Western Cape*. Department of Environmental Affairs and Development Planning.

[37] Miller, K. 1996. *Balancing the scales: Guidelines for increasing biodiversity's chances trough bioregional management.* Washington: World Resources Institute.

Bioregional planning requires a value shift away from the sectoral nature of institutions (i.e. where environmental issues are dealt with by environmentalists, economic issues by economists, and social issues by social scientists), to an all-embracing approach where the sustainable development challenge is addressed in an integrated and holistic manner.

Bioregional planning is designed to maximise the likelihood that protected area systems will collectively sample biodiversity. It is a flexible decision support framework for assessing the best resolution to resolve inter-sectoral conflicts over the use of land and sea, and it provides guidance regarding integrative local government planning and community group projects.

Bioregional planning provides an essential tool in bridging the divide between conservation and development tension. The application of this approach strengthens the planner's ability to incorporate sustainable development practices in the planning process.

Bioregional planning is furthermore characterised by the following (Miller, 1996):

a) Adaptive management: Bioregional programs are operated on an experimental basis, from which lessons may be drawn from experience to respond appropriately.
b) Biotic viability: Bioregional management programs embrace regions large enough to include the habitats and ecosystem functions and processes needed to make biotic communities and populations ecologically viable in the long-term. These regions must be able to accommodate migratory patterns, anticipate nature's time cycles and absorb the impacts of global change.
c) Co-operative skills development: Communities and public and private organisations, together, must locate and mobilise the skills, knowledge, and information needed to manage the area.
d) Economic sustainability: The maintenance of livelihoods and the economic wellbeing of people living and working within the bioregion, including those in industry, and especially in the matrix, must be encouraged.
e) Full involvement of stakeholders: All parties who can affect or benefit from the resources in the region should be fully involved in planning and managing the bioregional program. Of primary importance in this regard, is building the local capacity to participate in, negotiate, and perform the various tasks involved.
f) Institutional integration: Alliances between institutions are to be forged to close gaps, minimise overlap and make management and investment in the region more efficient.
g) International co-operation: Because some ecosystems cross international boundaries and, in some cases, extend globally along animal migration routes or along venues where endangered species are traded, international co-operation agreements for debate, and mechanisms for joint research, information management and investments must be part of the biodiversity management program. The MAB Program is particularly suited to this purpose.
h) Leadership and management: The leadership to establish bioregional programs may come from public agencies, or from the community of residents and resource users. The tasks of convening stakeholders, preparing and negotiating vision statements, and planning and implementing agreed-upon activities can be shared co-operatively between public and private entities, or be fully community based.
i) Reliable and comprehensive information: All stakeholders must have at their disposal the critical information needed to facilitate biodiversity management. GIS technology is to be used to help stakeholders envision their region and its distinctive features clearly. GIS will

help them to model options and scenarios for the future. This bioregional information system (BIS) program assembles a comprehensive and ecosystem-level GIS consisting of biophysical, social, economic, and cultural databases.

j) Research and monitoring: Research and inquiries should focus on people-environment interactions, the development of innovative methods for managing natural resources, and the long-term monitoring of environmental factors and the impact of management practices.

k) Restoration: Where the viability of some habitats or ecological functions have been impaired upon through excessive or inappropriate use, these areas are to be rehabilitated.

l) Social acceptance: Any proposals for changes in the way of life and livelihoods of the residents and local peoples, including indigenous communities, need to be acceptable to them. All stakeholders warrant the opportunity to participate in program management and implementation.

m) Structure of interrelated cores, corridors and matrices: These programs include core nature areas that feature representative samples of the region's characteristic biodiversity. Ideally such sites, which may already be designated as protected areas, should be linked by corridors of natural or restored natural plant cover to permit migration and adaptation to global change. Both the core sites and corridors should be nested within a matrix of mixed land uses and ownership patterns.

n) Use of knowledge: Scientific, local and traditional knowledge should be employed in planning and management activities. Biology, anthropology, economics, engineering and other related fields are to be tapped. Such knowledge helps stakeholders and program managers to anticipate nature's long and short cycles and to track global change.

9.1 CREATING A FRAMEWORK FOR BIOREGIONAL PLANNING

The Global Biodiversity Strategy puts forward fundamental objectives and supporting actions to establish a framework for bioregional planning and management. These objectives strive to achieve the following:

a) Create institutional conditions to promote bioregional planning

Bioregional planning and management have clear ecological, economic and social advantages. To achieve the above objective, the IUCN[38] proposed the following actions:

(i) Develop new methods and mechanisms at bioregional level for participation in the planning process and for the resolution of conflicts.

(ii) Give all communities the means to *'have a say'* in the management and distribution of the region's resources.

(iii) Establish inter-sectoral and inter-agency task forces to facilitate bioregional planning.

b) Incorporate biodiversity into the management of all biological resources

The mix of species in an ecosystem enables that system both to *provide* a flow of ecosystem services under given environmental conditions, and to *maintain* that flow if environmental conditions change. The loss of biodiversity therefore limits the resilience of the affected ecosystem, which in turn, may have direct negative economic implications.

[38] International Union for the Conservation of Nature.

c) Support bioregional conservation initiatives in the private sector

The bioregional planning approach requires that conservation on private land becomes an integral part of the strategy. This, in turn, requires that forward planning must be done on a holistic bioregional basis.

Environmental health is the key to sustainable development. The primary threat to environmental health is fragmentation of community-supporting ecosystems. Fragmentation generally leads to a cycle of environmental degradation, which subsequently influences the well-being of the dependent communities.

10 BIOREGIONAL PLANNING IN THE //KHARA HAIS SDF

The implementation of the bioregional planning approach in the //Khara Hais SDF generally follows a sequence of integrated phases applied in compliance with the relevant legislation and policy. The various phases and implementation mechanisms are illustrated by the figure below. Those that were not applicable to the //Khara Hais SDF are indicated.

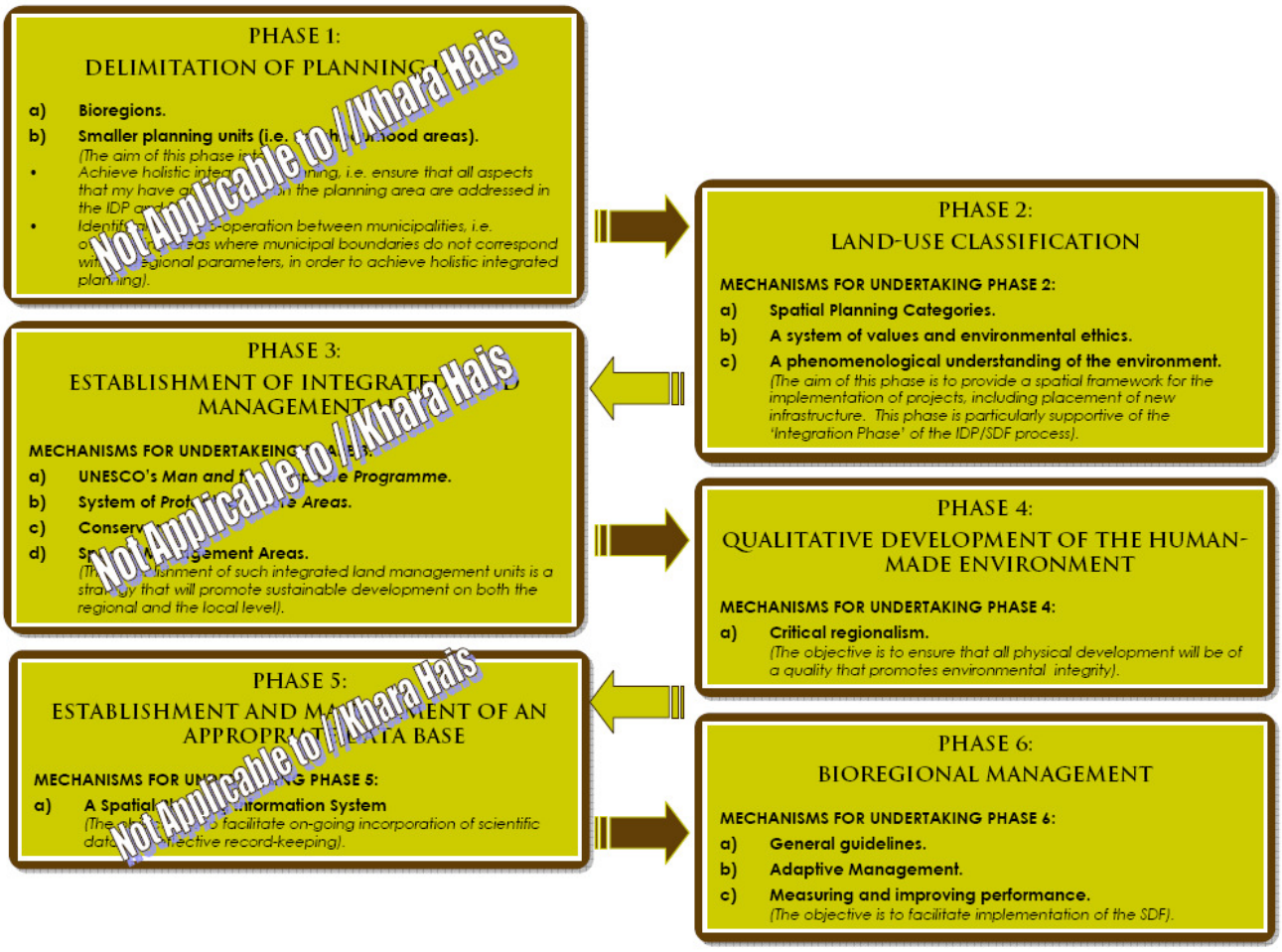


Figure 16: Implementation phases of bioregional planning (From: Bioregional Planning Manual, PGWC, 2003).

The figure below illustrates how the bioregional planning approach was implemented in the preparation of the //Khara Hais SDF and how it should be adopted in the preparation of future IDPs.

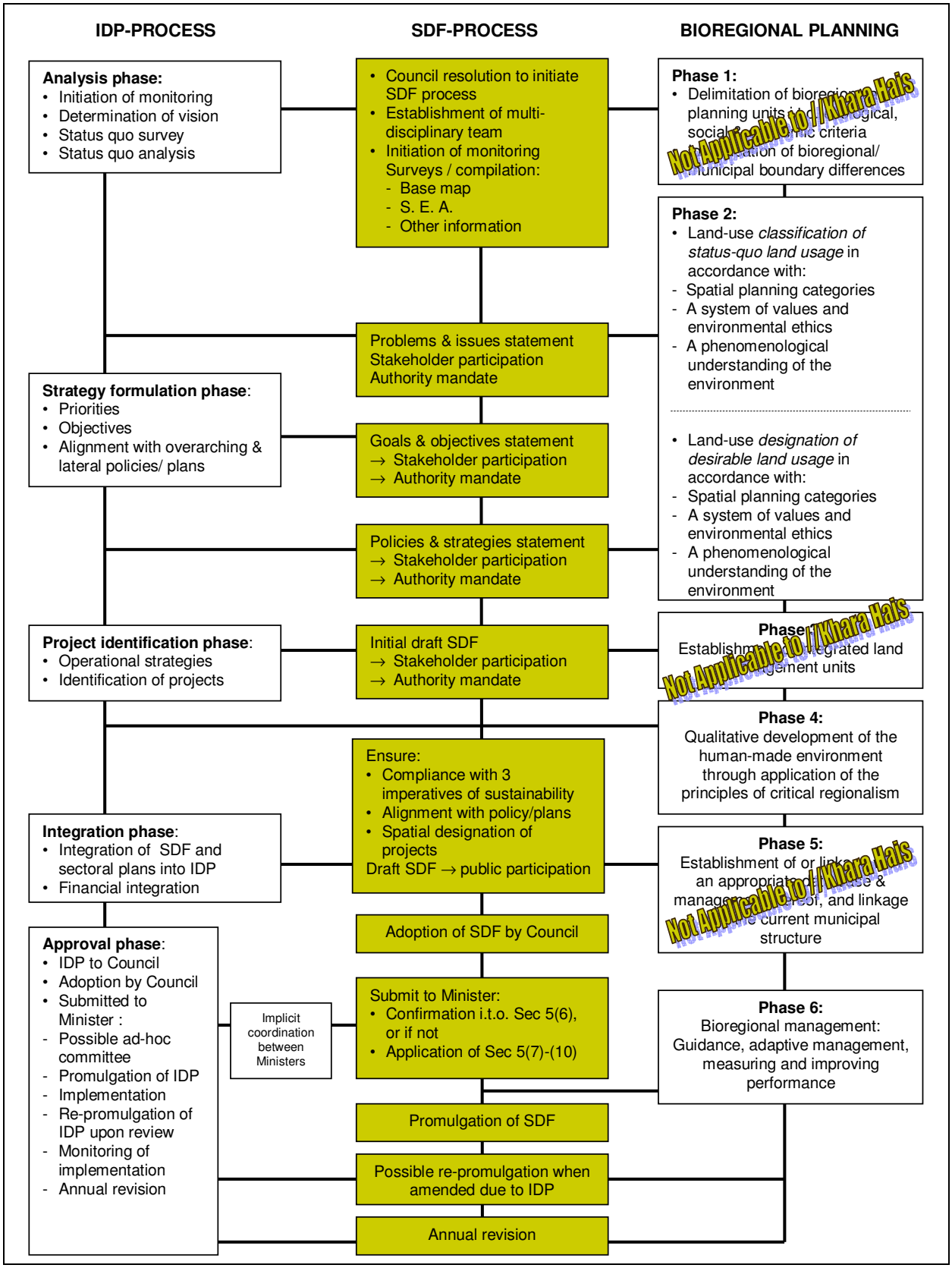


Figure 17: Application of bioregional planning in the preparation of the //Khara Hais SDF and future IDPs (Adapted from: Bioregional Planning Manual, PGWC, 2003).

10.1 LAND-USE CLASSIFICATION APPROACH

A fundamental phase of bioregional planning is to undertake appropriate land-use classification for the planning area in accordance with a classification system that is based upon a structure of interrelated cores, corridors and matrices. It was, subsequently directed by //Khara Hais Municipality that UNESCO's biosphere reserve designation model be adopted as a basis for such land-use classification.

In terms of this model, the classification system is to include core nature areas that feature representative samples of the region's characteristic biodiversity. Ideally such sites, which may already be designated as protected areas, should be linked by corridors of natural or restored natural plant cover to permit migration and adaptation to global change. Both the core sites and corridors should be nested within a matrix of mixed land uses and ownership patterns. The figure below illustrates the practical implementation of the land-use classification system adopted for //Khara Hais.

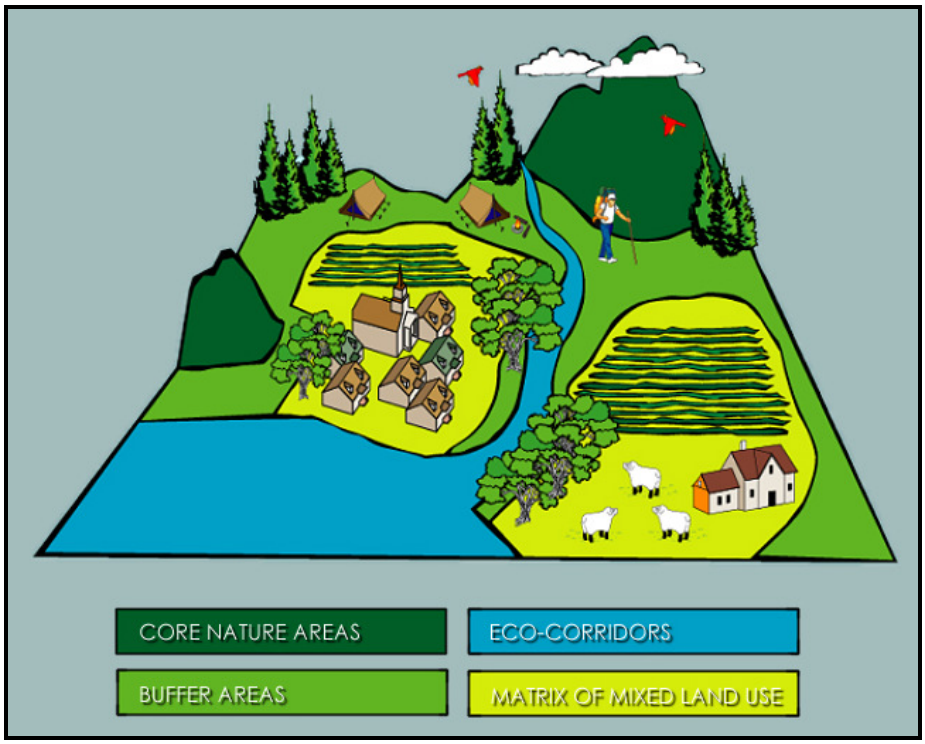


Figure 18: Land-use classification based on a structure of interrelated cores, corridors and matrices.

10.1.1 SPATIAL PLANNING CATEGORIES: A MECHANISM FOR LAND-USE CLASSIFICATION

In order to apply the biosphere reserve designation principles in //Khara Hais, a set of *Spatial Planning Categories* (SPCs) was developed. These SPCs are generally consistent with UNESCO's MaB Program and include all land zonings that are provided for under the existing Zoning Scheme Regulations.

A total of six SPCs has been provided for (refer to the table on the following page). In addition, a number of Sub-Categories have been created for the purpose of refining the designation process.

Table 19: The six primary Spatial Planning Categories adopted for //Khara Hais.

CATEGORY	DESCRIPTION	CLASSIFICATION CRITERIA & PURPOSE
Category A	**Designated Core Conservation Area**	a) Areas of high conservation importance to be protected from development. b) Generally only *non-consumptive land-uses*[39] allowed conditionally.
Category B	**Buffer Area**	a) Areas that serve as a buffer between Category A and Category C areas. b) Providing an appropriate interim classification for conservation-worthy areas that do not have statutory protection, including ecological corridors and areas worthy of rehabilitation. c) Appropriate sustainable development and non-consumptive land-uses may be allowed conditionally.
Category C	**Agricultural areas**	Rural areas where extensive and intensive agriculture is practiced.
Category D	**Urban-related areas**	Areas accommodating a broad spectrum of urban-related development and associated services and infrastructure.
Category E	**Industrial areas**	Areas accommodating industrial activities and associated infrastructure and where very high intensity of human activity and consumptive land use occur.
Category F	**Surface infrastructure and buildings**	All surface infrastructure and buildings not catered for in the above categories, including roads, railway lines, power lines, communication structures, etc.

Chapter 4 of Volume 2 provides a comprehensive description of the SPCs and Sub-Categories, and illustrates how these were applied in the land use classification of //Khara Hais.

10.2 MUNICIPAL MANAGEMENT IN TERMS OF BIOREGIONAL PRINCIPLES

From the perspective of promoting sustainable development and biodiversity conservation through integrating development and conservation, it is especially important to consider municipal planning and management in the context of the integrative relationship between ecological processes and the needs and perceptions of local communities. This integrative relationship is referred to as **bioregional management** in the *Global Biodiversity Strategy* (WRI, 1992).

To successfully implement bioregional management, the following challenges need to be addressed (Miller, 1996):

- Create the capacity to manage complex and integrated programs.
- Involve stakeholders in a meaningful manner.
- Develop and link established institutions, or if needed, create new ones.

A list of bioregional management guidelines to be adopted by the Municipality is provided in Volume 3.

[39] Land-use that does not include harvesting or extraction of products for consumption, e.g. recreation, tourism, religious ceremonies, research, education, etc.

SECTION D: PLANNING AND DESIGN FRAMEWORK

SECTION SYNOPSIS

This section describes the theoretical and principle context for the proposals and recommendations put forward in Volume 2. The planning and design of future development and the restructuring of the settlements of //Khara Hais are to be based on the directives summarized in this section, namely:

a) Requirements for high quality development and integrated urban design.
b) Planning and design theories.
c) Planning and design principles, including:
   - Principles for sustainable development and spatial planning.
   - Principles for urban design.
   - Principles for detailed place-specific planning and design.

As described in Chapter 15 of this Volume, the three imperatives for sustainable development are *human well-being*, *economic efficiency*, and *environmental integrity*. In the latter regard, a key aspect of the SDF is to ensure that all future development in //Khara Hais is of appropriate quality and standard and that any development enhances the integrity of the Municipality as a whole. As such, the planning and design of future development and of any urban renewal of Upington and the other settlements of //Khara Hais are to comply with the directives summarised in this section.

The aim and rationale behind the planning, design and construction approach proposed for //Khara Hais is to create a specific character and ambiance, which people will instinctively and intuitively recognise as qualitative and unique and which will instill a sense of pride, belonging and identity with those associated with the development.

It is important that the image of //Khara Hais as the main regional economic hub and 'portal' to the surrounding regions such as the Kalahari, Namibia, etc. (refer to Section B) be emphasised through innovative planning and design of all built structures.

The purpose of the planning and design directives put forward in this section is to provide a framework within which individual buildings can be designed and constructed to ensure an integrated and harmonious architectural language for the area. The guidelines should not stifle or inhibit innovative design and / or original thought. The challenge lies in respecting the genius loci (spirit of place) of the area, by determining its true identity and interpreting it in ever new ways.

The guidelines are intended to assist architects, home owners and others involved in the design and construction of buildings to create a qualitative place which would resonate with the place, historic, craft, natural and scale qualities of //Khara Hais and the Green Kalahari, in particular.

Municipal officials, landowners, the general public, and possibly professional planners and designers will require guidance pertaining to what is considered consistent with the design framework.

In practice, the application of the design framework implies that development applications have to be evaluated against the directives summarized in the Chapters below and the attached supplementary guidelines (refer to Section D of Volume 2).

If a development proposal is considered inconsistent with these directives, the Municipality will inform the applicant about the nature and extent of the inconsistency and the avenues to be explored to find appropriate solutions.

It is important that municipal officials and planners and designers understand the design framework and that they, through innovative planning and design, contribute towards the restoration of the existing human-made environment and the development of high quality places in accordance with these principles. The Municipality should show the way by developing institutional capacity to apply these design principles.

The criteria, guidelines and principles summarised in the Chapters below collectively provided the basis for the proposals and recommendations for the restructuring and future development of the settlements of //Khara Hais put forward in Volume 2.

11 REQUIREMENTS FOR HIGH-QUALITY DEVELOPMENT AND INTEGRATED URBAN DESIGN

11.1 UNDERSTANDING THE ENVIRONMENT

There is a widespread propensity to emphasise the role of functional, physical and biological factors in the formulation of policy and strategies, which are aimed at biodiversity conservation and planning, whilst the **existential meaning**[40] that people attach to their places and the values that underpin such meanings, are being neglected.

In recent history, places were physically structured through the application of general standards and regulations pertaining to, amongst others, street widths, building guidelines in respect of lines and heights, erf dimensions, and minimum densities. These standards and regulations serve an important purpose in regulating development. It is generally accepted that such measures, although essential, can also have negative effects if not used correctly. If the application of such measures does not take cognisance of site-specific requirements and the existential dimensions of people's lives, the development of 'nowhere places, can occur. 'Nowhere places' are generally characterised by *inter alia* a lack of structure and character, uncontrolled urban sprawl and extensive road and electricity networks that have negative ecological and aesthetical impacts.

Therefore, if one of the determinants of successful planning is accepted to be the value and meaning people attach to their places – what Lynch (1960[41]) would call a *'joint between mind and setting'* – then it is necessary to consider and address the above much neglected existential meanings in bioregional planning.

In this regard, it is noted that bioregional planning is essentially a **place-specific** planning approach, which recognises that any *place* has a distinct *character* and *meaning* to the people living in that place and those people that visit the place. In addition, it is important to note that the environment influences human beings and *vice versa*. The quality and nature of places have

[40] Existential meaning is concerned with existence, especially with human existence as viewed by existentialism, which is a philosophical theory emphasising the existence of the individual as a free and self-determining agent.

[41] Lynch, K. 1960. *The image of the City.* Massachusetts*:* MIT Press.

psychic implications and places cannot only be considered in functional or biophysical terms. *Humans cannot gain a foothold through scientific understanding alone* (Wagner, 1983[42]).

Although there may be general consensus that historical patterns of resource consumption are non-sustainable and that current settlement patterns and practices are destroying the integrity of the environment, there is, as yet, little consensus on what has to be done on a practical level to address the situation. In this regard, questions need to be asked and solutions found for critical problems, such as the loss of the endearing qualities of towns and the countryside, urban sprawl, detrimental development impacts, and widespread degradation of the natural environment. In addition, it is clear that comprehensive place-specific solutions will have to be found within which chronic and interrelated problems such as crime, health care, education, pollution, etc. can be confronted.

It is generally accepted that development planning should be practical. It is, however, equally important to recognise the need to consider future development in terms of specific, agreed upon values, norms and principles and a justifiable theoretical framework. Bioregional planning addresses these challenges by *inter alia* creating the institutional framework for mobilising people to take action within the area (place) they regard as home and, through debate and education, create a greater understanding of the nature, depth and relevance of these challenges on the local scale, and the policies, strategies and actions required to address them.

The challenge is to create *places* where humans can live with dignity and pride and to manage these places in a manner, which would ensure long-term environmental sustainability. In the long-term, it will be the pride and care people have for their places, which will form the basis for sustainable development and management of the places in //Khara Hais Municipality.

In this regard the IDP and SDF should be an expression of the wishes of the people of //Khara Hais in respect of **what kind of place** they want to live in and **what kind of future** they are aspiring for. In order to realise this objective, it is imperative to ensure compliance with the following primary requirements:

a) Promoting an understanding for the places of //Khara Hais in qualitative terms.
b) Developing an appreciation for the things that provide the Municipality and its component places with their unique qualities and give meaning to people's existence.
c) Encouraging the people of //Khara Hais to **think** about the nature and quality of their places in a fresh manner and to **express** their meanings, wishes and aspirations.
d) Enabling people to consider their place(s) in practical, qualitative terms and agree on a realistic policy framework.

A key aspect of bioregional planning is to develop a thorough understanding of the places where we live, in the quest to develop a comprehensive and realistic common appreciation of the meaning those places have for people and to re-evaluate and improve, where possible, the criteria on which modern planning legislation and control are based. The required understanding can be described as a **phenomenological understanding**[43] of the environment. Such an understanding needs to be supported, or cultivated, because, in the long-term, it would not help to try and solve practical problems without this understanding.

[42] Wagner, H.R. 1983. *Phenomenology of consciousness and sociology of the life-world: An Introductory study*. Edmonton: University of Alberta Press.

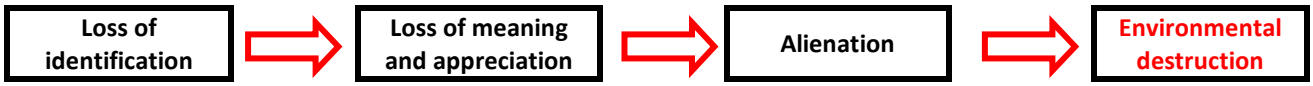
[43] A phenomenological understanding refers to how we experience ourselves and how we experience **things** outside ourselves, that is, all that is not self (Wagner, 1983).

A phenomenological understanding of the environment is rooted in place and its material being and meaning. In addition, such an understanding is based on the concepts of **dwelling, building, thing** and the phenomenology of both the **natural** and **human-made place** described in Chapter 11.2 below.

In this regard, it is important to note that to dwell implies a meaningful relationship between humans and a given environment. This relationship consists of the act of identification, or a *sense* of belonging to a certain *place* (Norberg-Schulz, 1993)[44].

People's 'being in the world' is determined when they *settle*. *Settlement* is the first mode of dwelling – *'when settlement is accomplished, other modes of dwelling, which concern basic forms of togetherness, come into play, namely urban space, institution and house'* (Norberg-Schulz, 1993). *Settlement, urban space, institution* and *house* constitute the total environment where natural, collective, public and private dwelling takes place. Through identification with these places and the *things* around them (i.e. their surroundings, or their local/personal/concrete world), humans gain their own identity (Heidegger, 1975)[45].

When humans lose their identification with natural and human-made things, which constitute their environment, and the latter has no *meaning* for them, they become *alienated*. When this happens, *things* become mere objects and nature in general is treated as a resource only, and environmental destruction occurs. Only if humans regain their ability of *identification* will they be able to stop the present destruction of the environment (Norberg-Schulz, 1993).



There is a need for humans to feel connected with the natural world. If humans have a strong sense and understanding of the phenomena of our life-world, they will understand these phenomena better, and thus will be more likely to perceive it as 'home'. This will, in turn, result in changes in decision-making processes and behaviour that can harmonise with the unique phenomena and special qualities of the environment as our 'home' (Norberg-Schulz, 1993).

It is therefore imperative that the people of //Khara Hais must think about and appreciate the value of the phenomena of both their natural and human-made places. In order to promote a phenomenological understanding and a process of thinking about the places that collectively form our life-world, it is important to have an appropriate understanding of the following:

11.2 PLACE: WHAT IS IT?

Our world consists of concrete phenomena such as people, animals, trees, stones, towns, water, homes, the moon, stars, clouds, night, day, etc. The concrete 'things', which constitute the world for humans, are interrelated and complex and some phenomena may include others. In general, it can be said that some phenomena form an environment to others. The concrete term for 'environment' is *place* (Norberg-Schulz, 1984).

[44] Norberg-Schulz, Christian 1993 **'The Concept of Dwelling'**. Rizzoli International Publications, Inc.
[45] Heidegger, Martin 1975. **Poetry, Languages, Thought**. Harper & Row Publishers, Inc.

Place can therefore be defined as 'a totality of concrete things, which have material substance, shape, texture and colour'. These substances determine the environmental character, which is the essence of place (Norberg-Schulz, 1984).

However, whilst natural and material elements are usually the primary components of place and the latter is usually described in physical or geographical terms, place means more than a geographical location and comprises more than material substance. Place also comprises intangible phenomena such as feelings, which provide the content of human existence.

A primary objective of bioregional planning is to articulate the qualities of place in order to promote a better understanding of both the form (structure) and context (meaning) of place, with the aim to arrive at a point where agreement could be reached pertaining to the 'goodness' or value of a place. The qualitative nature of place-making is considered integral to the sustainable development imperatives of human well-being and environmental integrity, and is therefore of decisive importance in the quest to achieve sustainable development. As is generally known, distinction is made between natural place and human-made place.

11.2.1 NATURAL PLACE

Natural place is broadly defined as the natural environment that has not been substantially modified by man and where natural ecosystem processes are maintained (Norberg-Schulz, 1993).

It is important to note that the natural place contains the human-made places, and that the manner in which the latter are developed, has an enormous impact on the *intrinsic* and *systemic* value of the natural place.

The relationship between the inhabited and natural landscapes is a fragile one. However, although human presence alters natural places and makes true wilderness impossible, there can still be relatively natural environments where humans are in the picture (McKibben, 1999). In this sense, some rural environments in //Khara Hais can remain natural environments. However, some agricultural environments are not natural anymore, owing to drastic intervention and management (e.g. sections of the Gariep River). It is generally recognised that the more drastic the human intervention and management, the more nature has ended.

11.2.2 HUMAN-MADE PLACE

The human-made (cultural) place is defined as *the environment that has been created or modified by humans to the extent that its primary ecosystem functions and natural aesthetic appeal are lost or diminished* (Schmithusen, 1964[46]).

Human-made places symbolise people's understanding of their environment and 'gather' a number of meanings (Norberg-Schulz, 1993). Human-made places generally fall into two broad categories, namely:

a) The farm and agricultural village that are related to the land and, as such, form part of a particular environment, which has an influence on their structure.
b) Urban dwellings within which the relationship to the natural environment has been weakened, or has been lost.

[46] Schmithusen, J. 1964. *Was ist eine Landschaft.* Erdkundliches Wissen.

It is often overlooked that the inhabited landscapes are the works of humankind and that a general understanding of what constitutes qualitative inhabited landscapes, and what to do to maintain such landscapes, are of decisive importance for long-term sustainable development.

As stated above, it is also often overlooked that inhabited landscapes are contained by natural landscapes and that the relationship between the inhabited and natural landscapes is a fragile one. The quality and meaning of both are dependent on a shared understanding of the authenticity of the environment.

12 PLANNING AND DESIGN THEORIES

During the past century our approach to urban design, which was heavily influenced by factors such as the introduction of the motor vehicle, zoning, urban sprawl and the privatization of public space, gave rise to the loss of quality urban spaces (Trancik, 1986[47]).

'Lost space' is defined as 'undesirable urban areas that are in need of redesign', or 'anti-space' which make no positive contributions to their surroundings or users. Inappropriate design approachs have led to humans losing their identification with the environment within which they live and ultimately environmental destruction (refer to Chapter 11.1 above).

One of the major requirements is therefore to design urban environments in which individual buildings are integrated with public space, thereby creating positive urban spaces. *Designers should create site plans that become generations of context, and design buildings that define exterior space rather than to displace it* (Trancik 1986:18).

Against this background, three major theoretical approaches (theories) to spatial design in urban areas were developed, namely

a) Figure Ground Theory
b) Linkage Theory
c) Place Theory

Together these three theories can provide effective strategies for integrated urban design (Trancik, 1986). They must be carefully considered in the planning and design of existing and new urban spaces and developments order to ensure that anti-space does not continue to occur in //Khara Hais and that humans regain their ability to identify with their 'place'.

To arrive at the understanding of the proposed principles for integration of urban design, it is necessary to understand the three approaches from which these principles stem.

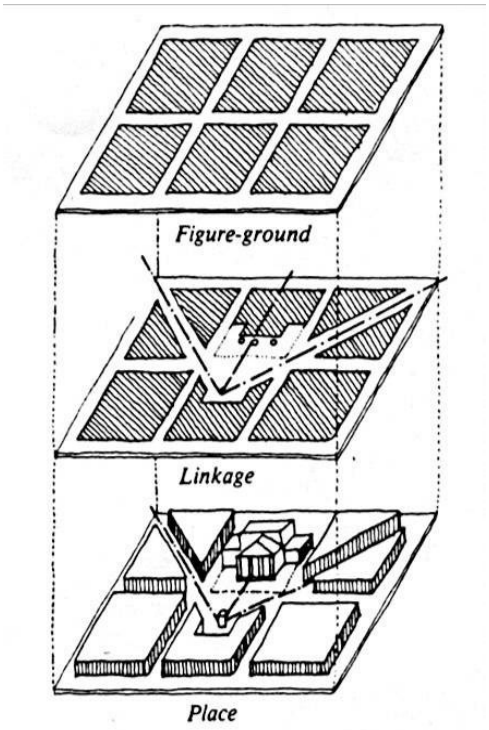


Figure 19: Trancik's illustration of the interrelationship between the three urban design theories (Trancik, 1986).

[47] Trancik, Roger. 1986. *Finding Lost Space*. Van Nostrand Reinhold, New York.

12.1 FIGURE GROUND THEORY

The figure-ground theory is founded on the study of the relative land coverage of buildings as solid mass ('figure') to open voids ('ground'). Each urban environment has an existing pattern of solids and voids, and through the figure-ground relationship these relationships can be manipulated by adding to, subtracting from, or changing the physical geometry of the pattern. The objective of these manipulations is to clarify the structure of urban spaces in an urban area or node by establishing a hierarchy of spaces of different sizes that are individually enclosed but ordered directionally in relation to each other.

Trancik explains that space is the medium of the urban experience and that spatial orientation is defined by the configuration of urban blocks that collectively form neighbourhoods and districts. It is the articulation and differentiation of solids and voids that make up the fabric of the city and establish physical sequences and visual orientation between places. It is therefore important that the perimeter of spaces and blocks be well articulated in order to establish positive outdoor rooms, which can be created by connecting the form of the building to the structure of the site or by turning and twisting the building's facades (Trancik, 1986).

12.2 LINKAGE THEORY

Unlike the figure-ground theory, which is based primarily on patterns of solids and voids, the linkage theory is derived from 'lines' connecting one element to another. These lines are formed by streets, pedestrian ways, linear open spaces, or other linking elements that physically connect the parts of a city. The designer applying the linkage theory tries to organize a system of connections, or a network that establishes a structure for ordering spaces. Emphasis is placed on the circulation diagram rather than the spatial diagram of the figure-ground theory. Movement systems and efficiency of the infrastructure take precedence over patterns of defined outdoor space (Trancik, 1986).

12.3 PLACE THEORY

The place theory goes one step beyond figure-ground and linkage theories in that it adds the components of human needs and cultural, historical, and natural contexts. Place theory gives physical space additional richness by incorporating unique forms and details indigenous to its setting and includes history, element of time and the fit between new design and existing conditions. In place theory, social and cultural values, visual perceptions of users and an individual's control over the immediate public environment, are as important as principles of lateral enclosure and linkage (Trancik, 1986).

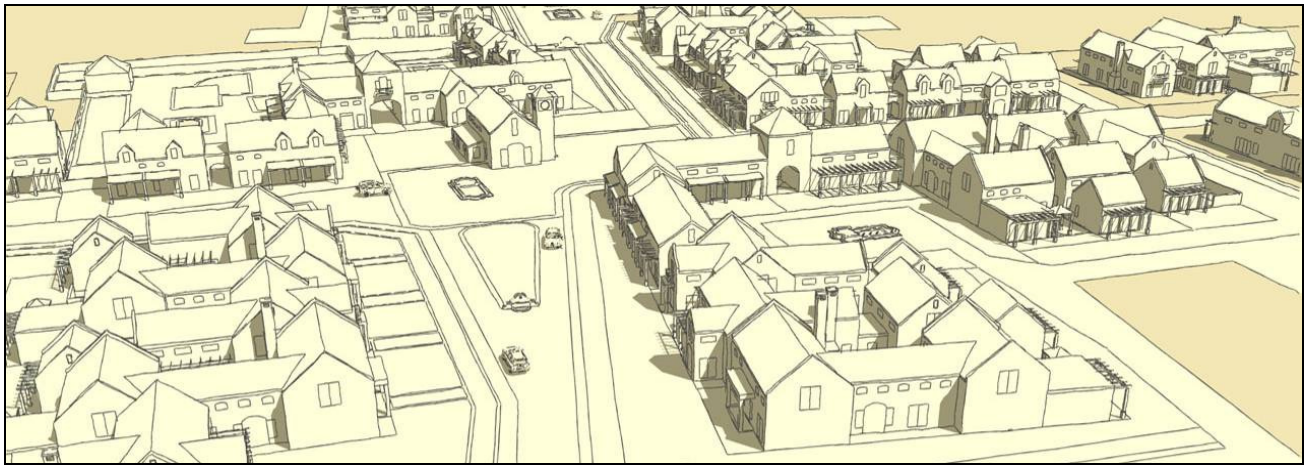


Figure 20: Illustration of a combination of the Figure-Ground, Linkage and Place Theory (DMP, 2008).

13 PLANNING AND DESIGN PRINCIPLES

13.1 PRINCIPLES FOR SUSTAINABLE DEVELOPMENT AND SPATIAL PLANNING

As stipulated in the terms of reference (refer to Chapter 1.1), the overall objective of the SDF is to facilitate sustainable development throughout //Khara Hais. Key aspects of sustainable development are the manner in which settlements are shaped and spatially orientated in the environment, and the extent to which a balance is achieved between the three global imperatives for sustainable development described in Chapter 15 below.

In this regard, Moughtin (1997)[48] states that principles of *sustainable development* would include clear objectives for a framework of urban design that emphasizes conservation of both the natural and built environment. In the development process there should be presumptions in favour of conservation, and a premium should be placed on the conservation of natural resources, wildlife and landscapes. There is a strong need to structure and restructure the built environment in a manner that promotes sustainable development. In this regard, the //Khara Hais SDF draws from the views of Moughtin (1997) and provides guidelines and principles pertaining to the following aspects:

13.1.1 ENERGY AND THE BUILT ENVIRONMENT

Traditions of vernacular architecture have many lessons for those seeking sustainable forms in urban planning and design, and there is much to commend in the common sense approach to energy conservation and environmental protection practised by many builders in the past (Moughtin, 1997). In this regard, six planning principles were identified, which would contribute towards promoting sustainable development:

Principle No 1

Priority should be given to the conservation and reuse of buildings, infrastructure and materials.

[48] Moughtin, C. 1997. *Urban Design – Green Dimensions*. Architectural Press, Oxford.

Principle No 2

Use local regional building materials for construction work. Where possible, it is preferable to use materials requiring low inputs of energy in fabrication, transportation to the site, and the construction process itself. Preference should be given to materials, which are labour intensive, rather than energy intensive in their extraction, dressing and erection.

Principle No 3

Avoid materials that cause environmental damage leaving behind unsightly spoil heaps and quarries. The worst effects of such damage, when it occurs, should be mitigated, and new buildings should be linked with tree planting schemes in an effort to offset some of the effects of pollution caused by the manufacturing of building materials.

Principle No 4

Relate the building to the local environment - to reduce the amount of external wall surface; to orientate the building towards the sun; to organise the interior of the building so that a buffer of storage rooms and other similar accommodation faces south, and to arrange for conservatories or sun spaces to be sited on the north, east or west facades.

Principle No 5

Design buildings for flexibility so that a mix of uses can be accommodated under the same roof and so that floor plans are robust, in the sense that they can be adapted for different uses during the building's lifetime.

Principle No 6

Buildings should be located on public transport routes and with close connections to other parts of the existing urban infrastructure and, where possible, development should take the form of infill within existing development or on 'brown land', that is, on previously used land or wasteland.

13.1.2 SUSTAINABLE TRANSPORT

Transport, in addition to bringing benefits to society, involves large costs. Costs, such as pollution and noise are incurred directly or indirectly by the users or by those passively affected by developments, whilst other costs are the result of environmental damage (Moughtin, 1997).

'Many of these costs, particularly from road building programs and the resulting increase in traffic, have fallen on the community rather than the developers of the transport system or its users. The price signals, such as road construction costs and cost of petrol, given by the transport market, because they ignore environmental costs, mislead the users into believing that personal mobility is cheaper than it really is. The depressed costs have therefore resulted in transport decisions harmful to the community' (Moughtin, 1997).

The aim of planning policies and urban design solutions must be to *reduce* the need for movement and to recognise that planning and designing urban forms for the reduced need for mobility, is a longer term solution to the problems facing society.

13.1.3 URBAN METAPHOR

Similar to any organic organism, a healthy urban environment is maintained only as long as the balance of its components is maintained. *'Excess growth is managed by the propagation of new colonies. The organic model for the urban area is most in tune with the concept of sustainable development when, in particular, it takes on the attributes of ecology.'* This would occur where there is a diversity in its components, which maintains the balance between the energy inputs and outputs including recycling, waste reduction and pollution levels (Moughtin, 1997).

13.1.4 URBAN FORM

Against the background of the key aspects of urban form, namely the *linear* urban area, the *gridiron plan* and the *highly centralised* settlement, it is contended that each may have a role to play in achieving sustainable development, and that much will depend on the circumstances in which each form is used. A public transport strategy and an ecological strategy are probably the two most important factors in determining urban form. *'Such settlements, to be effective, should be of a size determined by comfortable walking distances between activities in the settlement'* (Moughtin, 1997).

It is a priority for the immediate future, to make existing urban areas more sustainable, and to seek ways in which the great suburban belts of development, which encircle most settlements, can be made less energy-intensive in terms of mobility while maintaining a good quality of life for those living there.

13.2 PRINCIPLES FOR URBAN DESIGN

An integrated approach to urban design must combine the spatial definition of the figure ground theory with the connective qualities of the linkage theory and the social responsiveness of the place theory summarized in Chapter 12 above.

The combination of the three theories implies that in designing urban space the integration of various land-uses and activities is promoted and favored. '*Spaces that can accommodate mixed or integrated uses have much greater richness and vitality than single-use spaces, which are often static and remain lifeless for substantial periods of time. Design must respond to the dynamics of social uses in its physical form'* (Trancik, 1986:219)

It is also imperative that new ways of integrating the motor vehicle into the urban landscape be found in order to ensure that good quality outdoor spaces be created for pedestrians. Historically streets and squares where places to spend time in, as well as corridors through which to move, but in modern times they have lost much of their social function and physical quality. While it is accepted that in some areas the separation of the motor vehicle and the pedestrian should be promoted, the design of most urban spaces must accommodate an appropriate mix of people and cars and strategies such as the 'woonerf concept' must be considered (refer to Activity Street Policy Guideline 9.1(j) on pg 55 of Volume 2).

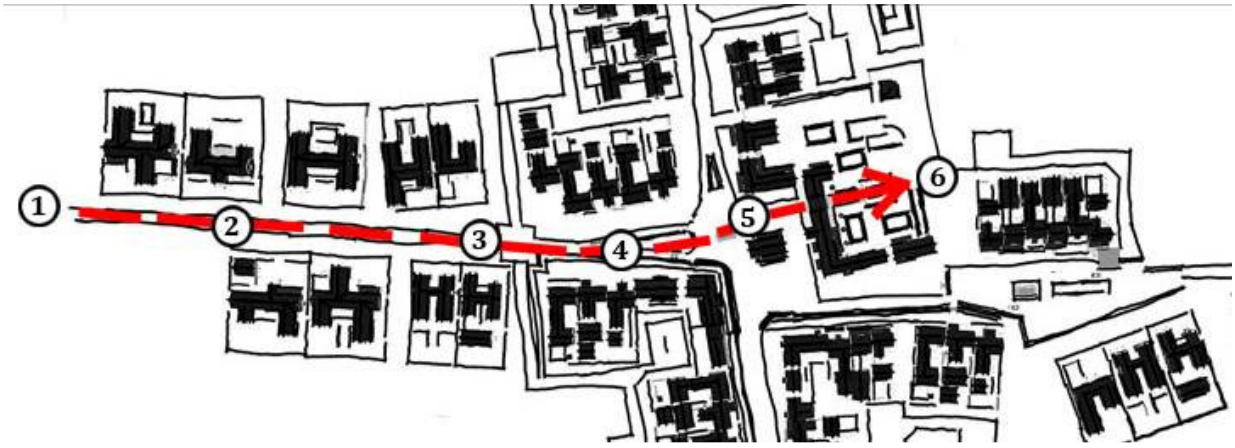
The separation of places of work and living, which has become the norm, must be addressed. The goal of an integrated approach to urban design should be to promote closer proximity between housing and employment where ever possible, without compromising the quality of living.

Finally it is imperative that a concern for design quality be integrated into the political decision-making process. *'Too often, function and economic considerations override those of design. Part of the designer's role is to influence policy makers and the public in order to ensure that the quality of the public environment is not compromised'* (Trancik, 1986:220).

In order to achieve these integrated design goals, the following five design principles are to be followed in the future planning and design of the settlements of //Khara Hais.

13.2.1 LINKING SEQUENTIAL MOVEMENT

Historic models should be considered for inspiration in restructuring modern urban spaces, i.e. urban spaces that have successfully solved problems of connecting existing structures into a sequential, unified space. Important urban design principles can be applied to contemporary design of places where the exterior landscape acts as a link between buildings and directing sequential movement through a series of spaces. The linkage principles can be applied to knit together discontinuities by infilling directional pedestrian space (Trancik 1986: 220).



Point 1: As one walks up the street the node comes into sight with its square in the distance.

Point 2: The street is defined on either side by buildings (lateral enclosure) (refer to Chapter 13.2.2).

Point 3 & 4: The focal point (axis and perspective) becomes prominent (refer to Chapter 13.2.4).

Point 5: As one cross the square the line of sight leads to a coachman's entrance (integrated bridging) (refer to Chapter 13.2.3).

Point 6: Upon entry, the enclosed vista opens and the agricultural landscape lies beyond.

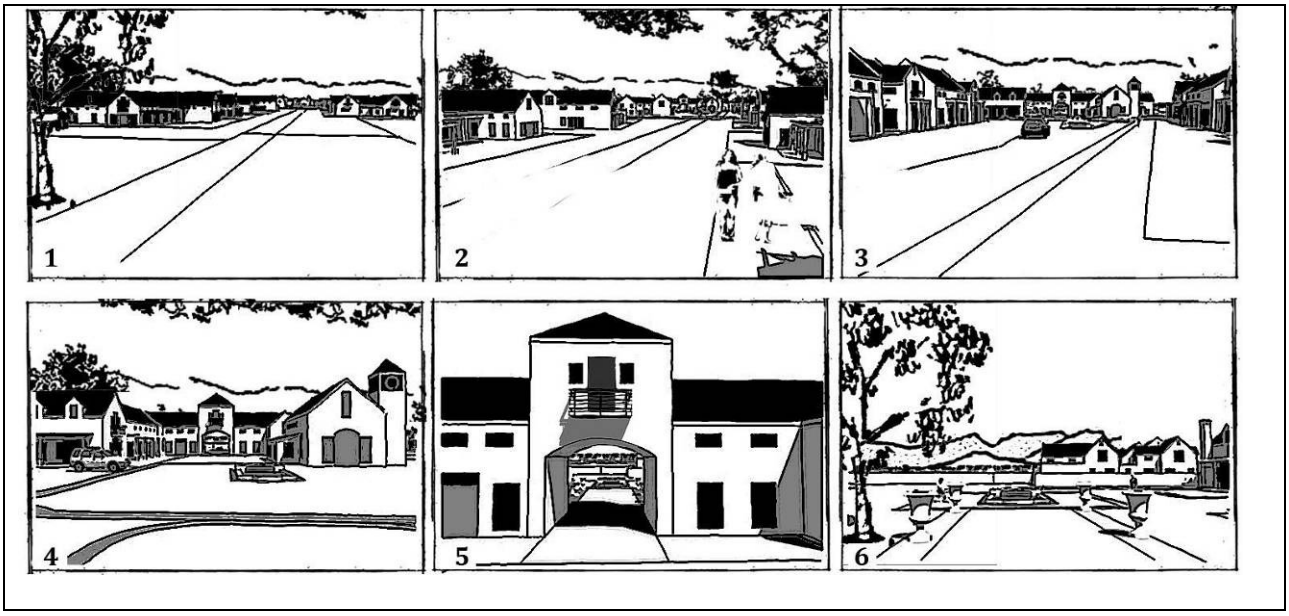


Figure 21: Illustration of Principle No 1 – Linking Sequential Movement (DMP, 2008).

13.2.2 LATERAL ENCLOSURE AND EDGE CONTINUITY

'Continuity and the use of walls are important to achieve lateral enclosure and to create a setting for street-level activities appropriate to the area being designed. 'The success or failure of public space depends largely on the character of its frontage and the continuity of walls' (Trancik 1986: 220).

The continuity and character of streetscapes can be promoted by following traditional building lines, where buildings front directly on the boundary of the erf and are connected on the sides. The result is a feeling of enclosure; *'buildings therefore enclose the street and define it as public space'* (KrugerRoos, 1998[49]).

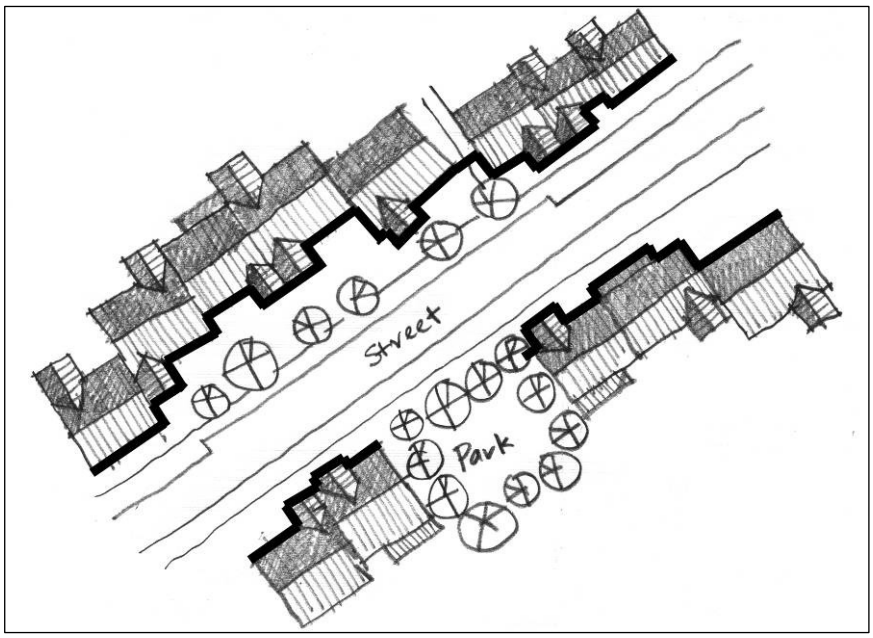


Figure 22: Lateral enclosure and edge continuity are promoted by placing building fronts right up to the street at slightly uneven angles.

The aim is to design buildings that are integrated with the public space instead of displacing it and using the principle of enclosure to define urban space. Poor enclosure is caused by wide roads and buildings which are too low and therefore do not create the 'walls' of the urban space. Continuity and the use of walls are therefore important to achieve

[49] KrugerRoos Architects and Urban Designers. 1998. *Stellenbosch Historical Core: A Conservation program and Sustainable Historical Core Study.*

lateral enclosure and to create a setting for street-level activities appropriate to the area being designed.

13.2.3 INTEGRATED BRIDGING

Another design principle that can be applied successfully in today's urban landscape is the concept of integrated bridging, which is best described as a building that is a bridge, and a bridge that is also a building. The two functions are successfully integrated into one form.

Figure 23: Methods of Designing continuous spaces without negative gaps (DMP, 2008).

This principle can be applied when blockages or barriers in the urban fabric need to be overcome. It is possible to design continuous spaces without the negative gaps that often disrupt the spatial flow. The objective is to create an uninterrupted mesh of activities in public spaces. Separated buildings and activities can be integrated with coherent public space defined by architectural and landscape elements.

13.2.4 AXIS AND PERSPECTIVE

Axis and perspective can greatly help in designing hierarchies of spaces based on levels of visual and functional importance and can be used to clarify and order block patterns.

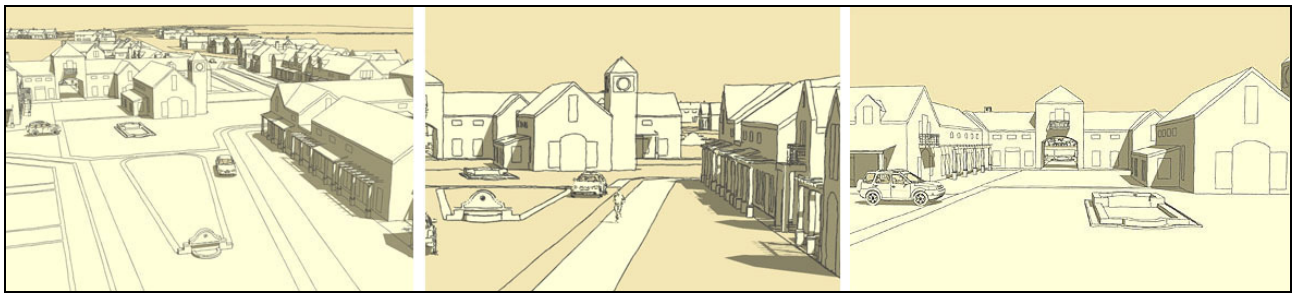


Figure 24: Various Axis and Perspectives illustrating hierarchy of spaces (DMP, 2008).

Trancik explains that, where as block patterns give shape to streets and squares, axis and perspective provide directional guidance for movement, their layout should invariably be based on simple, fundamental geometries that link elements at the macro scale (Trancik, 1986).

13.2.5 INDOOR / OUTDOOR FUSION

In all urban design the transition between indoor and outdoor space is of great importance. It is emphasised that the principle of indoor / outdoor fusion has enormous potential for creating new types of urban spaces in the future – spaces that are responsive to energy needs (passive-solar,

climate-controlled systems and the like), spaces that take greater advantage of the potential of year - round usage, spaces that integrate landscape and urban gardens, and spaces that also explore new architectural possibilities with the use of advanced materials (Trancik, 1986).

13.3 PRINCIPLES FOR DETAILED AND PLACE-SPECIFIC PLANNING AND DESIGN

The planning and design approach of //Khara Hais is based upon the concept of 'critical regionalism'.

'Critical regionalism' promotes a return to the development of high-quality settlements that comply with the definition of '*a unique sustainable man-made environment which is in harmony with the natural environment that 'contains' it and which demonstrates the five guiding principles of 'critical regionalism'.* Such quality is often dependent upon a specific 'sense of togetherness' and character that requires a specific scale and density. 'Critical regionalism' constitutes a sensory understanding and appreciation of the environment and its component 'things'. The approach is based on five basic principles that should guide the planning, design and management of development, namely (Kelbaugh, 1997)[50]:

13.3.1 SENSE OF PLACE

'Sense of place' is described as the *'degree to which a place can be clearly perceived and mentally differentiated and structured in time and space by its residents, and the degree to which that mental structure connects with their values and concepts'* (Lynch, 1998).

In evaluating a sense of place, one needs to recognise that there are various 'components of sense' that, together, provide a particular environmental quality for the observer. 'Sense of place' is based upon the *sensed quality* of the unique 'components of sense' of a particular place, including its identity, character, structure, local climate, topography, vegetation, building materials, building practices, and local authenticity.

In practice, in the preparation and consideration of development applications (including architecture and placement of new infrastructure), it is important to ensure that the above 'components of sense' are incorporated into the planning and design. For example, this implies that development should *inter alia* reflect elements of the traditional vernacular of the area, make use of local natural building materials, and reflect a strong sense of local authenticity.

//Khara Hais should, through its architecture and construction methods reflect a distinctive and authentic 'Green Kalahari' sense of place. The settlements should also reflect a sense of a 'frontier settlement' against the background of the harsh and semi-desert of the Kalahari. This rare quality is immensely marketable and should be enhanced and protected at all cost.

The characteristics of //Khara Hais that are documented in Section B above collectively create a particular sense of place. These characteristics should therefore be considered in the design process and be reflected, to the extent possible, in the planning and of any development or renewal projects.

[50] Kelbaugh, D. 1997. *Common Place: Toward neighborhood and regional design.* Seattle: University of Washington Press.

13.3.2 SENSE OF HISTORY

Historical precedents are a good point of departure when planning, designing and rehabilitating new places and existing areas (Kelbaugh, 1997). It is imperative that the local history, traditions and values be thoroughly studied as part of any planning process and that the planning and design of both the cultural and the natural environment should reflect these dimensions.

The history of an area should form the basis of development and land-use in any area. Developments should reflect an appreciation for the history, culture and traditions of the local people and build on the historical precedents presented by existing high quality settlements.

Any architectural type that has stood the test of time must be doing something right in terms of responding to climate, social and cultural needs, tradition, and economy, and should, therefore, be worth copying (Kelbaugh, 1997).

It is suggested that the elements of the traditional building form be adopted in the planning and design of new developments in //Khara Hais. As such, the design of buildings is to draw from traditional building dimensions and footprint which would, amongst other, provide for the creation of secluded courtyards and similar sheltered areas that create a specific sense of enclosure and protection against the generally harsh local climate. The traditional 'letter' architectural form of the 'I', 'T' or 'H' shape floor plan illustrated by the figure below could be applied to all new residential buildings.

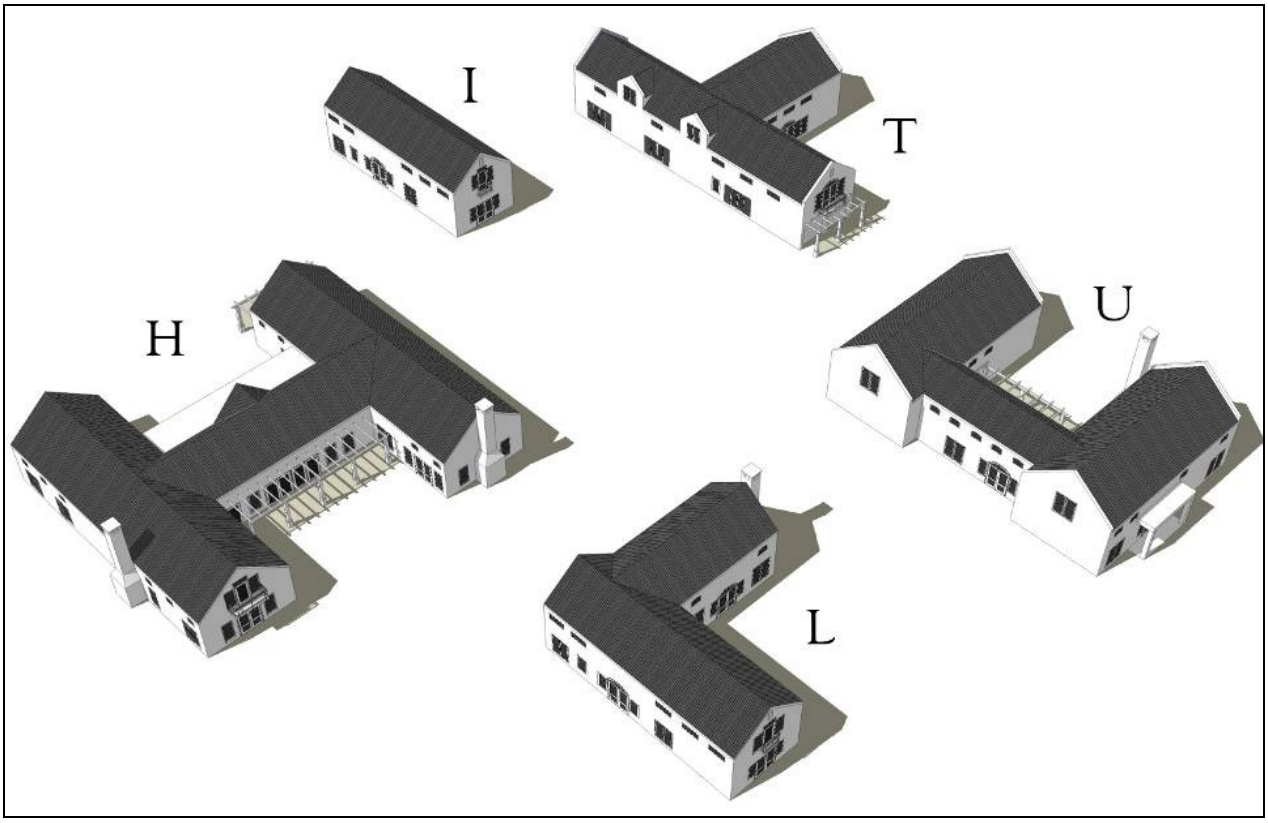


Figure 25: The traditional 'letter' architectural form.

The drawings below illustrate the typical application of the traditional 'letter' architectural form as suggested for development in //Khara Hais.

13.3.3 SENSE OF CRAFT

Critical regionalism builds upon a return to craftsmanship and avoids construction types, which have become less sustainable and less appropriate over most of the past century (Kelbaugh, 1997).

The characteristics and the craftsmanship of the local people evolved in response to the challenges of nature and the needs of the historic people of the area. In order to create *places* where humans can live with dignity and pride, it will be necessary to revive and retain the traditional craftsmanship and to ensure that an appropriate 'sense of craft' is reflected in all development.

There is evidence of unique stone masonry, thatching and woodwork, etc. which reflect a sense of craft. This should be encouraged throughout future new development and urban renewal in //Khara Hais.

13.3.4 SENSE OF NATURE

Nature is a good model for design because it holds the key to vitality and sustainability. It is recognised that architects, landscape planners, and urban planners can learn from the sophistication of ecological systems and that these can fulfil a meaningful role to protect ecosystems, natural processes, and the symbiosis between organisms and their environment (Kelbaugh, 1997). This can be achieved through appropriate study and developing an appreciation for the unique environmental value of a place before any planning, design and development is undertaken. Any development is to reflect an appreciation for the unique natural attributes of the environment and respond to the dominant local forces of nature.

This implies that in any development there should be presumption in favour of conservation and that a premium will be placed on the conservation of natural resources, wildlife and landscape. Materials for new development should, for example, be obtained from sustainable sources, and in the design of buildings the use of energy consumption should be minimised. In addition, the following principles should be incorporated into the planning and management of any development:

a) Minimise use of the four generic resources, namely energy, water, land and materials. There is serious wastage of, in particular, water and energy. There is a huge opportunity for //Khara Hais to become a model for the generation and wise use of solar power (refer to Chapter 8.2.5 on Page 47).
b) Maximise resource re-use and/or recycling.
c) Use renewable resources in preference to non-renewable resources.
d) Minimise air, land and water pollution.
e) Create a healthy, non-toxic environment.
f) Maintain and restore the earth's vitality and ecological diversity.
g) Minimise damage to sensitive landscapes, including scenic, cultural, historical, and architectural aspects.

Due to its location, climatic conditions, and general image as 'frontier settlement' opportunities exist in //Khara Hais to subtly expose people to nature. The Bi-Lo restaurant complex is a good example of planning and design that builds upon and promotes a sense of nature. The innovative landscaping and use of indigenous trees evident in, for example Middelpos, are a further example

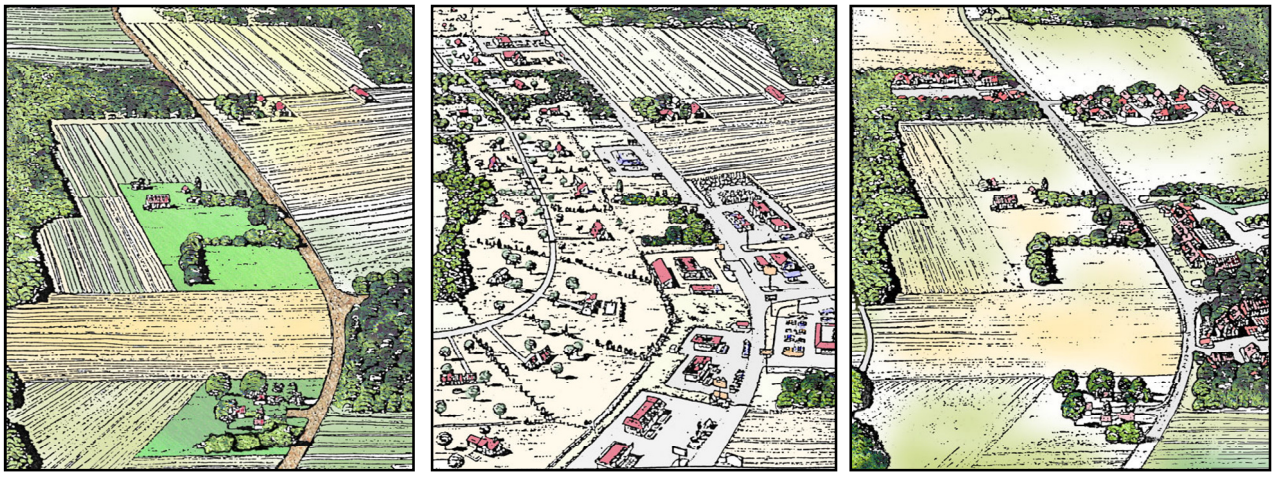
of how a sense of nature can be established in a manner that enhances the general quality of the cultural environment. These practices are to be encouraged throughout //Khara Hais.

13.3.5 SENSE OF LIMITS

There is a need for physical and temporal boundaries to frame and limit human places and activities. There is also a need for human scale in the built environment. Kelbaugh (1997) states that '*the sense of limits also pertains to a need for psychological boundaries – ones that make life more understandable and negotiable*'.

In order to achieve the above, strategies need to be formulated and implemented to prevent the unlimited urban sprawl that characterises some of the urban and peri-urban areas. Such strategies need to reflect the *ability of the natural environment* to sustain development and consumptive land-use. In addition, such strategies need to ensure that the development density of human settlements is such that it would facilitate the development of places where people can live with dignity and pride.

It is therefore imperative that future development in the various settlements strengthen the nodal character of such settlements (refer to the figure below) and that the designated urban edge be adhered to (refer to Chapter 5 of Volume 2).



A: Rural character before development. **B: Extensive development creating urban sprawl.** **C: Nodal development such as 'farmyards'.**

Figure 26: Desired nodal form of rural settlements in //Khara Hais.

SECTION E: PLANNING AND IMPLEMENTATION CONTEXT

SECTION SYNOPSIS

This section describes the legislative context within which the //Khara Hais SDF was prepared, including reference to the international and national obligations and protocols of which South Africa is a signatory.

14 PLANNING CONTEXT

//Khara Hais Municipality recognises that one of the critical determinants of the success of development planning is the extent to which all spheres of government co-operate and co-ordinate their activities.

In this regard, the Municipality gives effect to the requirement that development planning should be undertaken within the context of five distinct levels, namely the **international level, national level, provincial level, district level** and the **local level**. The figure below indicates the various planning levels and the aspects addressed under each level.

The Municipality recognises that effective integrated planning at these levels requires innovative forms of institutional integration and social co-operation. Dialogue amongst all I&APs, participatory planning and institutional flexibility are, therefore, essential to plan and manage effectively. For this co-operation to occur, a concerted effort is necessary to establish lines of communication and co-ordination mechanisms.

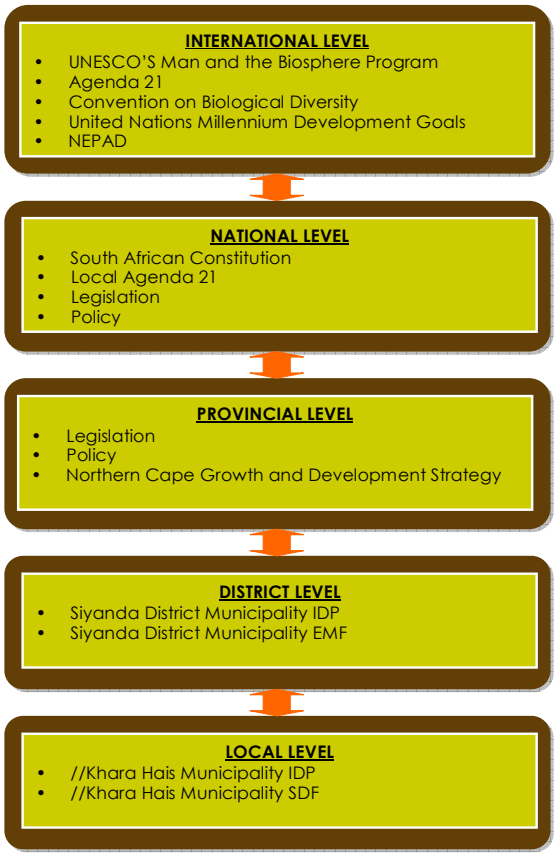


Figure 27: The planning levels applicable to the //Khara Hais SDF.

14.1 INTERNATIONAL PROGRAMS AND CONVENTIONS

14.1.1 UNESCO'S MAN AND THE BIOSPHERE PROGRAM

In terms of the project brief, this spatial development framework is to provide strategies that will promote sustainable development in the Municipality (refer to Section F below). It is generally accepted that UNESCO's MAB Program provides an ideal framework for achieving this objective.

The MAB Program is a global program of international scientific co-operation, dealing with people-environment interactions over the entire realm of bioclimatic and geographic situations of the biosphere. Research under the MAB Program was designed to solve practical problems of resource management, and aims to fill gaps in the understanding of the structure and function of ecosystems, and of the impact of different types of human interaction. Key ingredients in the MAB Program are the involvement of decision-makers and local people in research projects, training and demonstration at the field level, and the bringing together of disciplines from the social, biological and physical sciences in addressing complex environmental problems (Miller, 1996).

The MaB program is supported by a host of institutions that could lend financial and/or logistical support (refer to the figure below).

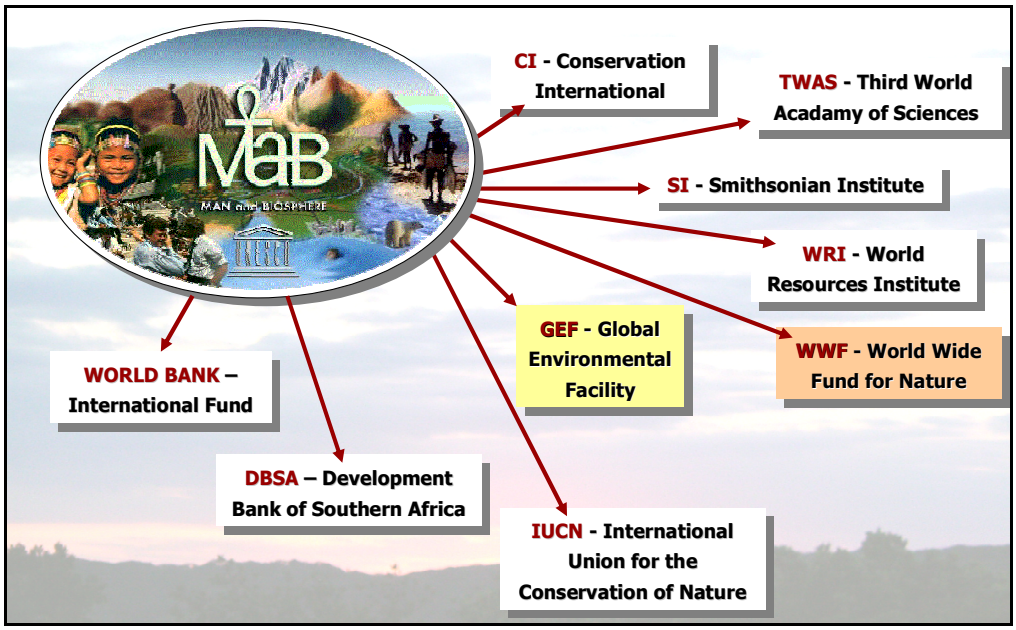


Figure 28: Global supporting institutions for the MaB program.

14.1.2 AGENDA 21

Agenda 21 is an international program, adopted by more than 178 governments, to put sustainable development into practice around the world. It emerged from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992.

The South African government and, subsequently, local governments such as //Khara Hais are obliged to implement the Agenda 21 agreements, which reflect global consensus and political commitment on developmental and environmental cooperation.

Underlying the UNCED agreements is the realisation that the international world cannot continue with present policies, which increase poverty, hunger, sickness and illiteracy and cause continuing deterioration of ecosystems on which life on earth depends.

The government recognises Agenda 21 as the fundamental program of action for achieving sustainable development. Agenda 21 provides a broad overview of issues pertaining to sustainable development, including statements on the basis for action, objectives, recommended activities and the means of implementation.

In the process of transforming the South African society, the South African Government stated as one of its priorities that the government *'must ensure that all South African citizens, present and future, have the right to a decent quality of life through the sustainable use of resources'*. It is also stated that *'environmental considerations must be built into every decision'* and that current legislation should be revised *'with a view to establishing an effective system of environmental management'* in South Africa. The underlying principle of sustainability is not only recognised as a priority by the South African Government, but also internationally by way of Agenda 21.

Of particular relevance to the formulation of this spatial development framework, are the following principles of Agenda 21:

(a) Integrated approach to the planning and management of land resources

The broad objective of this program is to facilitate the allocation of land-uses to the uses that provide the greatest sustainable benefits and to promote sustainable and integrated management of land resources. In so doing, environmental, social and economic issues should be taken into consideration. Protected areas, private property rights, the rights of indigenous people and their communities as well as other local communities should be taken into account.

(b) Promoting sustainable human settlement development

It is expected that about half the world's population is living in cities. The urbanisation of society is part of the development process and on a global scale cities generate 60 percent of gross national product.

In industrialised countries, the consumption patterns of cities are severely stressing the global ecosystem, while settlements in the developing world need more raw material, energy, and economic development simply to overcome basic economic and social problems.

This implies, *inter alia*, the following:

(i) Providing adequate shelter for all, especially for rapidly growing populations.
(ii) Improving human settlement management to ensure sustainability of all urban settlements.
(iii) Promoting sustainable land-use through environmentally sound planning and management.
(iv) Promoting the integrated provision of services, such as water, sewage, stormwater and solid waste management.

(c) Integrating environment and development in decision-making

Countries can no longer afford to make decisions concerning developmental issues, without taking the environment into account. Changes are needed in the institutional structures of government to enable more systemic consideration of the environment when decisions are made on, amongst others, land-use, conservation, economic, social, agriculture, transportation and other policies.

Governments should also strengthen national institutional capacity and capability to integrate social, economic and environmental issues at all levels of developmental decision-making and implementation. Attention should also be given to moving away from narrow sectoral approaches and progressing towards full cross-sectoral co-ordination and co-operation. This implies the following:

(i) Integrating environment and development at the policy, planning and management levels, with the objective of improving, or restructuring, the decision-making process.

(ii) Providing an effective regulatory framework, with the main objective to promote the integration of environment and development policies through appropriate legal and regulatory policies, instruments and enforcement mechanisms at the national, provincial and local levels.

(iii) Making effective use of economic instruments and other incentives, by:

- Incorporating environmental costs into the decisions of producers and consumers, and not to pass these costs onto society in general or to future generations.
- Moving towards integrating social and environmental costs into economic activities so that prices will appropriately reflect the relative scarcity and total value of resources (water and electricity as examples) and contribute to the prevention of environmental degradation.
- Including the use of market principles in providing economic instruments (e.g. the establishment of an environmental trust fund) and policies to pursue development.

(d) Establishing systems for integrated environmental management and auditing

This principle includes the use of IEM procedures, which include the implementation of environmental management systems, monitoring and auditing in all development and conservation initiatives.

South Africa is one of the global partners of Agenda 21, which calls on governments to adopt national strategies for sustainable development.

The onus of implementing the key objective of Agenda 21 that of sustainable development, has been placed clearly on local governments and its constituent communities. The real roots of Agenda 21's success therefore lie at the micro, local level, all of which are addressed through the Local Agenda 21, which is described below.

14.1.3 LOCAL AGENDA 21

As described above, the South African government is a signature to the Agenda 21 agreement.

The Local Agenda 21 was developed as a result of South Africa's obligation towards the international Agenda 21 agreement, and is defined as a local-government-lead, community-wide, and participatory effort to establish a comprehensive action strategy for environmental protection, economic prosperity and community well-being in the local jurisdiction or area. This

requires the integration of planning and actions across economic, social and environmental spheres. Key elements are community participation, assessment of current conditions, target setting for achieving specific goals, monitoring and reporting (Department of Environmental Affairs and Tourism, 1998).

The Municipality supports the Local Agenda 21 and aims to give practical effect to, *inter alia*, the following themes of the Local Agenda 21 through its IDP and this SDF:

a) Promoting sustainable use of resources.
b) Preventing pollution.
c) Conserving biodiversity.
d) Meeting the basic needs of local communities.
e) Providing access to the skills, knowledge and information needed to enable people to play a meaningful role in society.
f) Providing opportunities for culture, leisure and recreation to all.
g) Developing human settlements that have appropriate scale and form.
h) Establishing appropriate links with other parts of the world.

The above themes can be promoted by giving practical effect to the following six key elements of the Local Agenda 21 (DEAT, 1998)[51]:

(i) Promoting the local authority's own environmental performance.
(ii) Integrating sustainable development aims into the local authority's policies and activities.
(iii) Promoting public awareness and education.
(iv) Consulting and involving interested and affected parties.
(v) Establishing appropriate partnerships.
(vi) Measuring, monitoring and reporting on progress towards sustainability.

14.1.4 CONVENTION ON BIOLOGICAL DIVERSITY

Another international obligation of relevance to the formulation of this spatial development framework entails the implementation of the Convention on Biological Diversity which was also adopted by more than 178 governments at the UNCED in Rio de Janeiro in 1992.

The three main objectives of the Convention are:

a) The conservation of biodiversity.
b) The sustainable use of biological resources.
c) The fair and equitable sharing of benefits arising from the use of genetic resources.

The conservation of biological diversity on earth is vital, as the essential goods and services depend on the variety and variability of genes, species, populations and ecosystems. Biological resources feed and clothe us, and provide housing, medicines and spiritual nourishment.

The loss of the world's biological diversity continues, mainly from habitat destruction, over-utilisation of resources, pollution and the inappropriate introduction of foreign plants and animals. This decline in biodiversity is largely caused by humans and represents a serious threat to our development and very survival on earth.

[51] Department of Environmental Affairs and Tourism, 1998: A National Strategy for IEM in South Africa, Discussion Document. DEAT, Pretoria.

In meeting its international obligations of the Rio Convention, the South African government is required to develop national strategies, plans or programs, or adapt existing ones, to integrate the conservation and sustainable use of biodiversity into sectoral and cross-sectoral plans, programs and policies. To this end, Government has published the National Environmental Management Act 107 of 1998 and the National Environmental Management: Biodiversity Act 10 of 2004.

The vision, mission and principles guiding a biodiversity strategy for South Africa are described below:

(a) Vision for South Africa

A prosperous, environmentally conscious nation, whose people are in harmonious coexistence with the natural environment, and which, derives lasting benefits from the conservation and sustainable use of its biological diversity.

(b) Mission of Government

Government will strive to conserve South Africa's biological diversity and to, thereby, maintain ecological processes and systems whilst providing lasting development benefits to the nation through the ecologically sustainable, socially equitable, and economically efficient use of biological resources.

(c) Guiding Principles

In the context of the above vision and mission, the following inter-related principles, amongst others, will guide the application, assessment and further development of the biodiversity policy and strategy:

a) All life forms and ecological systems have intrinsic value.
b) All people and organisations should act with due care to conserve and avoid negative impacts on biodiversity, and to use biological resources sustainably, equitably and efficiently.
c) The benefits derived from the use of South Africa's biological resources are dependent upon such resources being used at a rate within their capacity for renewal, i.e. sustainable use; maintaining the ecological integrity of the natural systems which produce such resources; minimising, or avoiding, the risk or irreversible change induced by humans; adequate investments being made to ensure the conservation and sustainable use of biodiversity; and avoiding or minimising the adverse impacts of the use of non-renewable resources on biodiversity.
d) Benefits arising from the use and development of South Africa's biological resources will be shared in an equitable manner.
e) Decision-makers and users of biological resources will be guided by economic approaches, which assess the full social and environmental costs and benefits of projects, plans and policies that impact upon biodiversity, i.e. undertake environmental audits.
f) Where there is a threat of significant reduction, or loss, of biological diversity but inadequate or inconclusive scientific evidence to prove this, action should be considered to avoid or minimise threats, i.e. adopt the precautionary principle.
g) Interested and affected individuals and groups will have an opportunity to participate in decisions about the ways in which biological resources are conserved and used.

h) The conservation and sustainable use of biodiversity will be integrated strategically at all levels into national, provincial, local and sectoral planning programs, and policy efforts (e.g. forestry, agriculture, fisheries, land reform, industry, education, health, mining, etc.) to implement the goals and objectives of the policy effectively.

14.1.5 UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) represent a global partnership that has grown from the commitments and targets established at the world summits of the 1990s. Responding to the world's main development challenges and the calls of civil society, the MDGs promote poverty reduction, education, maternal health, gender equality, and aim at combating child mortality, AIDS and other diseases.

Set for the year 2015, the MDGs are an agreed set of goals that can be achieved if all actors work together and do their part. Poor countries have pledged to govern better, and invest in their people through health care and education. Rich countries have pledged to support them through aid, debt relief and fairer trade.

The United Millennium Development Goals are as follows:

a) Eradicate extreme poverty and hunger:
- Reduce by half the proportion of people living on less than a dollar a day.
- Reduce by half the proportion of people who suffer from hunger.

b) Achieve universal primary education:
- Ensure that all boys and girls complete a full course of primary education.

c) Promote gender equality and empower women:
- Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015.

d) Reduce Child mortality:
- Reduce by two thirds the mortality rate among children under five.

e) Improve maternal health:
- Reduce by three quarters the maternal mortality ratio.

f) Combat HIV/AIDS, malaria and other diseases:
- Halt and begin to reverse the spread of HIV/AIDS.
- Halt and begin the reverse the incidence of malaria and other major diseases.

g) Ensure environmental sustainability:
- Integrate the principles of sustainable development into country policies and programs, reverse loss of environmental resources.
- Reduce by half the proportion of people without sustainable access to safe drinking water.
- Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020.

h) Develop a global partnership for development:
- Develop further an open trading and financial system that is rule-based, predictable and non-discriminatory, including a commitment to good governance, development and poverty reduction – nationally and internationally.
- Address the least developed countries' special needs. This includes tariff- and quote-free access for their exports; enhanced debt relief for heavily indebted poor countries; cancellation of official bilateral debt; and more generous official development assistance for countries committed to poverty reduction.

- Address the special needs of landlocked and small island developing States.
- Deal comprehensively with developing countries' debt problems through national and international measures to make debt sustainable in the long term.
- In co-operation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.
- In co-operation with the private sector, make available the benefits of new technologies – especially information and communications technologies.

14.1.6 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

A Framework Convention on Climate Change emerged from the UNCED held in Rio de Janeiro in 1992. This was signed by 154 governments, including South Africa. The Convention addresses the threat of global climate change by urging governments to reduce the sources of greenhouse gases. The ultimate objective of the Convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system of the world.

One of its first achievements was to establish a *national greenhouse gas inventory* as a count of greenhouse gas emissions and removals. Accounts must be regularly submitted by signatories of the United Nations Framework Convention on Climate Change.

14.1.7 UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

The Convention, the only convention stemming from a direct recommendation of the Agenda 21, was adopted in Paris on 17 June 1994 and entered into force in December 1996. It is the first and internationally legally binding framework set up to address the problem of desertification. The Convention is based on the principles of participation, partnership and decentralisation – the backbone of good governance and sustainable development. It now has 192 country parties to the Convention, making it truly global in reach. It addresses land degradation in arid, semi-arid and dry sub-humid areas of the world.

14.2 INTERCONTINENTAL AGREEMENTS AND STRATEGIES

14.2.1 NEW PARTNERSHIP FOR AFRICA'S DEVELOPMENT

It is imperative that the planning, future development and management of //Khara Hais respond and give effect to the requirements and aims of the New Partnership for Africa's Development (NEPAD).

NEPAD is a pledge by African leaders, based on a common vision and a firm and shared conviction, that they have a pressing duty to eradicate poverty and to place their countries, both individually and collectively, on a path of sustainable growth and development, and at the same time to participate actively in the world economy and body politics.

NEPAD revolves around African ownership and management. Through this program, African leaders are setting an agenda for the renewal of the continent. The agenda is based on national and regional priorities and development plans that must be prepared through participatory

processes involving the people. It is their role to articulate these plans as well as lead the processes of implementation on behalf of their people.

The program is a new framework of interaction with the rest of the world, including the industrialised countries and multilateral organisations. It is based on the agenda set by African peoples through their own initiatives and of their own volition, to shape their own destiny.

To achieve these objectives, African leaders will take joint responsibility for the following:

a) Strengthening mechanisms for conflict prevention, management and resolution at the regional and continental levels, and to ensure that these mechanisms are used to restore and maintain peace;
b) Promoting and protecting democracy and human rights in their respective countries and regions, by developing clear standards of accountability, transparency and participatory governance at the national and sub-national levels;
c) Restoring and maintaining macroeconomic stability, especially by developing appropriate standards and targets for fiscal and monetary policies, and introducing appropriate institutional frameworks to achieve these standards;
d) Instituting transparent legal and regulatory frameworks for financial markets and auditing of private companies and the public sector;
e) Revitalising and extending the provision of education, technical training and health services, with high priority given to tackling HIV/AIDS, malaria and other communicable diseases;
f) Promoting the role of women in social and economic development by reinforcing their capacity in the domains of education and training; by the development of revenue-generating activities through facilitating access to credit; and by assuring their participation in the political and economic life of African countries;
g) Building the capacity of the states in Africa to set and enforce the legal framework, as well as maintaining law and order;
h) Promoting the development of infrastructure, agriculture and its diversification into agro-industries and manufacturing to serve both domestic and export markets.

14.3 NATIONAL CONTEXT

This spatial development framework is to be prepared and give practical effect the intentions of the relevant Acts in terms of, *inter alia*, the following:

a) Supporting an environmental ethic and the principle of environmental sustainability. The spatial development framework will provide a model for environmental sustainability and will, as such, illustrate the practical implementation of the underlying ethics of the relevant legislation and policy.
b) It will create positive guidelines in terms of which the relevant authorities will, in future, be able to consider development applications in accordance with the relevant legislation.

The primary national statutes that provide the legislative context for the preparation of this spatial development framework are the following:

14.3.1 SOUTH AFRICAN CONSTITUTION

The Constitution of the Republic of South Africa Act 108 of 1996 places an obligation on all to ensure that sustainable development is promoted and that the integrity of the natural environment is respected.

In the Bill of Rights clause of the Constitution (Section 24iii), it is stated that *'everyone has the right to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that secure ecologically sustainable development and use of natural resources, whilst promoting justifiable economic and social development'*.

The Constitution compels government to pass legislation to promote sustainable social and economic development, for example, through the enactment of the National Environmental Management Act 18 of 1998, the Development Facilitation Act 67 of 1995, the Local Government: Municipal Structures Act 117 of 1998, and the Local Government: Municipal Systems Act 32 of 2000.

Central to the objectives of the Constitution and the enabling legislation is the promotion of sustainable development, which requires that the three imperatives for achieving sustainable development, namely, **environmental integrity**, **human well-being** and **economic efficiency** be promoted in a balanced manner.

The Development Facilitation Act introduces substantive principles (norms) that are to guide land development decision-making. In addition to the latter principles, the Act also introduces the concept of Land Development Objectives (LDOs). The Act requires that plans that set objectives and targets for development and which inform the spatial and developmental imperatives of an area have to be recognised. Policy plans such as Integrated Development Plans (IDPs) are normative in that they set out desired aims. Normative legislation calls for a proactive planning system which places the emphasis on considered judgements and discretion of decision-makers, as opposed to the application of standardised rules and regulations (refer to the Green Paper on Development Planning, Government Notice 20071).

A decisively important principle, which underlies economic development, is the broadening of the economic base of a region (which is a fundamental government policy). Optimum development, furthermore, originates in sound and sustainable economic performance (economic efficiency), which requires the optimal utilisation of the comparative economic advantages[52] of the region. A key objective of the //Khara Hais SDF is to unlock and enhance the comparative economic advantages of the area.

Sustainable development requires specific institutional capacity and for the development process to be successful, communities must be empowered to create, manage, and maintain their own development programs. This capacity must be structured and channelled into their own community institutions (through for example IDPs of local authorities).

[52] Case & Fair (1999) defines comparative economic advantage *as the advantage in production of a product enjoyed by one place over another when that product can be produced at a lower cost in terms of other goods than it could be produced by another place or country*.

An integrated and holistic approach to development planning is therefore promoted in the Constitution and enabling legislation. This implies that the interrelationship between economic activities and other development dimensions such as social, demographic, institutional, infrastructure, financial, and environmental aspects should be considered in a balanced manner. As is contemplated in the Constitution and the enabling legislation referred to above, the social fabric of society (with special emphasis on the basic needs of human resource development) must be recognised as an integral part of any development strategy.

In terms of the Constitution, the responsibility for local socio-economic development and management vests with local government, which has the following responsibilities:

a) Provision of democratic and accountable government for the local communities.
b) Provision of services to the communities in an equitable and sustainable manner.
c) Promotion of social and economic development.
d) Promotion of a safe and healthy environment.

14.3.2 DEVELOPMENT FACILITATION ACT

The Development Facilitation Act 67 of 1995 contains provisions and general principles relating to land development and LDOs. Provision is made in the Act for granting statutory status to such principles and policies in both the national and provincial spheres of government.

Chapter 1 of the Act sets out two kinds of general principles, namely principles for land development and principles for decision-making and conflict resolution. These principles include, inter alia, provisions for ensuring that integrated land development is promoted, while taking into account social, economic, institutional, and physical aspects of land development, and that environmentally non-sustainable land development practices are discouraged. The Act, furthermore, requires that members of communities affected by land development should actively participate in land development and that such development must be sustainable (Van Wyk, 1999:29[53]).

14.3.3 LOCAL GOVERNMENT: MUNICIPAL STRUCTURES ACT

The Local Government: Municipal Structures Act 117 of 1998 provides a framework within which the private sector and municipalities can work together to promote common interests. Of particular interest is the provision made for development-orientated planning and the need for development action to be aligned with integrated development plans.

This Act builds on the constitutional imperative of providing for functions and powers of local government. It places an obligation on municipalities to seek to achieve integrated sustainable and equitable social and economic development of its area as a whole by, *inter alia*, ensuring integrated development planning.

In terms of the Constitution, differentiation is made between four types of local government areas, namely:

- Category A: Metropolitan Municipalities
- Category B: Local Municipalities
- Category C: District Municipalities

[53] Van Wyk, J. 1999. *Planning Law: Principles and Procedures of Land-use Management*. Juta & Co.

- Category D: District Management Areas

In terms of the Act the Siyanda District Municipality is responsible for integrated development planning for the district as a whole, whilst //Khara Hais Municipality is responsible for development planning within its area of jurisdiction.

14.3.4 LOCAL GOVERNMENT: MUNICIPAL SYSTEMS ACT

The Local Government: Municipal Systems Act 32 of 2000 gives effect to the country's vision of developing local government, building on the constitutional provisions for basic development rights. The Act elaborates on the core principles, mechanisms, and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of communities within the Municipality, working in partnership with the Municipality's political and administrative structures. The Act establishes an enabling framework for core processes of planning, performance management, resource mobilisation and organisational change that underpin the notion of developing local government (Glazewski, 2000: 252[54]).

The Act provides the primary statutory context for the preparation of an IDP for all spheres of government, namely, the **provincial, district** and **local town level**.

The above Act stipulates that *'when preparing, amending, withdrawing, or reviewing a development framework, regard shall be had to the natural and developed environment and ecologically sustainable development in general, and all prescribed steps taken in this respect, shall be specified and all prescribed studies shall be carried out'*. This implies that environmental planning must be based on a holistic integrated planning approach that will address the full spectrum of environmental and related key issues. It is, therefore, proposed that planning at all levels be undertaken in terms of the bioregional planning principles, the 'place-specific' planning approach and the biosphere reserve program described in this document.

14.3.5 NATIONAL SPATIAL DEVELOPMENT PERSPECTIVE

The South African government's key priority is to increase economic growth and to promote social inclusion. A clearly articulated set of spatial priorities and criteria is one of the mechanisms through which government provides a strategic basis for focusing government action, weighing up trade-offs, and linking the strategies and plans of the three spheres and agencies of government. The National Spatial Development Perspective (NSDP) is a critical instrument for policy co-ordination, with regard to the spatial implications of infrastructure programs in national, provincial and local spheres of government. It is in this context that in January 2003, the NSDP was approved as an indicative tool for development planning in government.

The NSDP provides:

a) A set of principles and mechanisms for guiding infrastructure investment and development decisions.
b) A description of the spatial manifestations of the main social, economic and environmental trends that should form the basis for a shared understanding of the national space economy.
c) An interpretation of the spatial realities and the implications for government intervention.

[54] Glazewski, J. 2000. *Environmental Law in South Africa*. Butterworth Publishers.

The NSDP has been updated in 2006 and its ultimate purpose is to fundamentally reconfigure historic apartheid-based spatial relations, and to implement spatial priorities that meet the constitutional imperative of providing basic services to all and alleviating poverty and inequality. To this end, the document examines the spatial dimensions of social exclusion and inequality, recognising the burden that unequal and inefficient spatial arrangements place on communities. For example, the poor have to incur huge transaction costs by commuting large distances to and from work.

Given government's objectives of growing the economy, creating jobs, addressing poverty and promoting social cohesion, the NSDP assists government on confronting three fundamental planning questions:

- Where should government direct its investment and development initiatives to ensure sustainable and maximum impact?
- What kinds of spatial forms and arrangements are most conducive to the achievements of the objectives of democratic nation-building and social and economic inclusion?
- How can government as a whole capitalise on complementarities and facilitate consistent decision-making; and move beyond focusing on integration and co-ordination procedures to establishing processes and mechanisms that will bring about strategic co-ordination, interaction and alignment?

In order to contribute to the broader growth and development policy objectives of government, the NSDP puts forward a set of five normative principles:

Principle 1: Rapid economic growth that is sustained and inclusive is a pre-requisite for the achievement of other policy objectives, among which poverty alleviation is key.

Principle 2: Government has a constitutional obligation to provide basic services to all citizens (e.g. water, energy, health and educational facilities) wherever they reside.

Principle 3: Beyond the constitutional obligation identified in Principle 2 above, government spending on fixed investment should be focused on localities of economic growth and/or economic potential in order to gear up private-sector investment, to stimulate sustainable economic activities, and to create long-term employment opportunities.

Principle 4: Efforts to address past and current social inequalities should focus on people, not places. In localities where there are both high levels of poverty and demonstrated economic potential, this could include fixed capital investment beyond basic services to exploit the potential of those localities. In localities with low demonstrated economic potential, government should, beyond the provision of basic services, concentrate primarily on human capital development by providing, social transfers such as grants, education and training, and poverty-relief programs. It should also reduce migration costs by providing labour-market intelligence to give people better information, opportunities and capabilities, to enable them to gravitate, if they choose to, to localities that are more likely to provide sustainable employment and economic opportunities.

Principle 5: In order to overcome the spatial distortions of apartheid, future settlement and economic development opportunities should be channelled into activity corridors and nodes that are adjacent to or that link the main growth centres. Infrastructure investment should primarily support localities that will become major growth nodes in South Africa and the SADC region, to create regional gateways to the global economy.

The NSDP principles are aimed specifically at focusing government action and investment avoiding the so-called *'watering can'* approach, and enabling the developmental state to achieve maximum social and economic impact within the context of limited resources. While the idea of focusing government spending on economic infrastructure in areas with some potential for economic development may seem to exclude many other areas from development, this is in fact not the case.

14.3.6 OTHER ENABLING NATIONAL LEGISLATION, POLICY & STRATEGIES

The table below summarises the additional national legislation, policy and strategies that provided the legislative framework for the formulation of the //Khara Hais SDF:

Table 20: Enabling national legislation, policy and strategies.

ACT, ORDINANCE, STRATEGY	PRIMARY FUNCTIONS
Conservation of Agricultural Resources Act 43 of 1983	This Act provides for control over the use of natural agricultural resources in order to promote the conservation of soil, water resources and vegetation and the combating of weeds and invader plants. Regulations were promulgated in Government Gazette 9238 of 25 May 1984, which provide, *inter alia,* for the use, control and protection of virgin soil, indigenous vegetation, vleis, marshes, water sponges and water-courses.
Environment Conservation Act 73 of 1989	Control of littering, pollution, activities which may have a detrimental effect on the environment, combating of noise, control and licensing of waste disposal (landfill) sites, preparation and contents of environmental impact reports. The Act also provides for the declaration and management of any property in private ownership as a *Protected Natural Environment (PNE)*, the control of environmental pollution and for imposing penalties where any provision of the Act is contravened.
National Environmental Management Act 107 of 1998	The main aims of this Act are, amongst others, the following: a) The improvement of environmental management by all levels of government. b) The strengthening of the enforcement of environmental law by introducing innovative mechanisms to recover clean-up costs. c) Enhancing public participation by permitting private prosecution. It recognises that all South Africans have the right to an environment that is not harmful to his/her health or well-being and that the State must protect and fulfil the socio-economic and environmental rights of all and strive to meet the basic needs of the previously disadvantaged communities.
National Environment Management Biodiversity Act 10 of 2004	The National Environmental Management: Biodiversity Act 10 of 2004 provides for the management and conservation of South Africa's biodiversity within the framework of NEMA. It provides for: a) The protection of species and ecosystem that warrant national protection. b) The sustainable use of indigenous biological resources. c) The fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources. d) The establishment of a South African National Biodiversity Institute.
National Environment Management Protected Areas Act 57 of 2003	The objectives of this Act are to, *inter alia*, provide for the declaration and management of protected areas, to give effect to international agreements on protected areas and to provide for co-operative governance in the declaration and management of protected areas and to provide for the continued existence of South African National Parks. This Act provides for the participation by communities in conservation and its associated benefits, and for co-operative governance in the management of protected areas.
National Heritage Resources Act 25 of 1999	The purpose of this Act, which is administered by the South African Heritage Resources Agency, is to preserve and protect the historical and cultural heritage of this country, which includes natural and human-made assets. This Act provides for the proclamation of *National Monuments* and the designation of *Conservation Areas*, on the grounds of their historic, aesthetic or scientific interest. The Act stipulates that the Council must be consulted with respect to the planning of a Conservation Area.
National Water	In the National Water Act 36 of 1998, the principles of sustainability and equity are the central tenets that

Act 36 of 1998	guide the protection, use, development, conservation, management and control water resources. The purpose of the Act takes the following factors into account, namely: a) Meeting the basic human needs of present and future generations. b) Promoting equitable access to water. c) Redressing the results of past racial and gender discrimination. d) Promoting the efficient, sustainable and beneficial use of water in the public interest. e) Facilitating social and economic development. f) Providing for growing demand for water use. g) Protecting aquatic and associated ecosystems and their biological diversity. h) Reducing and preventing pollution and degradation of water resources. i) Meeting international obligations. j) Promoting dam safety. k) Managing floods and droughts.
Disaster Management Act 57 of 2002	The Disaster Management Act 57 of 2002 provides for: a) An integrated and co-ordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post disaster recovery. b) The establishment of national, provincial and municipal disaster management centres. c) Disaster management volunteers. d) Other disaster related matters.
Mineral and Petroleum Resources Development Act 28 of 2002	The Mineral Act 50 of 1991 was repealed and replaced by the Mineral and Petroleum Resources Development Act 28 of 2002 and makes provision for equitable access to and sustainable development of the nations' mineral and petroleum resources. The Act has the following principles: a) Recognising that minerals and petroleum are non-renewable natural resources. b) Acknowledging that South Africa's mineral and petroleum resources belong to the nation and that the State is the custodian thereof. c) Affirming the State's obligation to protect the environment for the benefit of present and future generations, to ensure ecologically sustainable development of mineral and petroleum resources and to promote economic and social development. d) Recognising the need to promote local and rural development and the social upliftment of communities affected by mining. e) Reaffirming the State's commitment to reform to bring about equitable access to South Africa's mineral and petroleum resources. f) Being committed to eradicating all forms of discriminatory practices in the mining and petroleum industries. g) Considering the State's obligation under the Constitution to take legislative and other measures to redress the results of past racial discrimination. h) Reaffirming the State's commitment to guaranteeing security of tenure in respect of prospecting and mining operations. i) Emphasising the need to create an internationally competitive and efficient administrative and regulatory regime.
Physical Planning Act 125 of 1991	This Act sets out South Africa's planning framework, i.e. regulates the levels at which plans operate, the responsibility for their drafting and implementation and their contents. In terms of this Act, policy and structure plans (SDFs) should promote the orderly development of the area to which they relate for the benefit of all its inhabitants.
White Paper on Agriculture (Dept of Agriculture, 1995)	The White Paper (Department of Agriculture, 1995) mandates an agricultural sector characterised by a range of farm sizes that are market directed, with access to agricultural land being broadened through land reform and supported by the provision of appropriate services. Agricultural production is to be based on the sustainable use of natural agricultural and water resources. Of particular relevance to the formulation of the SDF, is the following: a) Productive agricultural land should be retained for agricultural use. b) All farmers are to be made aware of and be accountable for the sustainable utilisation of natural agricultural resources. c) The land-user's responsibility towards the land will include the rehabilitation of mismanaged natural agricultural resources.

Strategic Plan for South African Agriculture (2001)	The National Department of Agriculture aims to lead and support sustainable agriculture and promote rural development through: ensuring access to sufficient, safe and nutritious food, eliminating skewed participation, optimising growth, remunerative job opportunities and incomes in the agricultural sector, enhancing the sustainable management of natural agricultural resources and ecological systems, ensuring effective and efficient governance, and ensuring knowledge and information management. The Strategic Plan has the following objectives: a) Create a common vision for key stakeholders. b) Design and implement a strategic framework to guide policy and implementation in the future. c) Address issues undermining investor confidence and the building of better understanding and good social relations. d) Ensure increased access and participation in the sector through well-designed empowerment processes and programs. e) Combine, share and optimise the resources and benefits among the partners. f) Foster global competitiveness, growth and profitability in the sector in order to attract new investment. g) Ensure sustainable development. h) Build lasting partnerships among the public, private and community stakeholders and NGOs.
White Paper on Spatial Planning and Land Use Management (2001)	This White Paper builds, amongst other, on the concept of the municipal IDP as provided in the Municipal Systems Act 23 of 2000. The essential elements of the new system proposed in the White Paper are the following: a) Principles: The system will be based upon principles and norms which will be aimed at achieving sustainability, equality, efficiency, fairness and good governance in spatial planning and land use management. b) Land use regulators: The White Paper proposes a category of authorities able to take the different types of decision falling into the realm of spatial planning and land use management, namely, land use regulators (municipalities). c) IDP-based local spatial planning: The Municipal Systems Act 23 of 2000 requires that part of each Municipality's IDP must be a spatial development framework. The White Paper spells out the minimum elements that must be in a spatial development framework. It also proposes that the SDF operate as an indicative plan, whereas the detailed administration of land development and land use changes is dealt with by a land use management scheme, which will actually record the land use and development permissions accruing to a piece of land. d) A uniform set of procedures for land development approvals. Where a proposed development is not permissible in terms of the prevailing land use management scheme, then permission is required from the appropriate land use regulator. The White Paper proposes one set of such procedures for the whole country, thereby eliminating the current situation where different procedures apply in different provinces. This will facilitate national capacity building within land use regulators as well as performance management of the system. e) National Spatial Planning Frameworks: In order to achieve more integrated and co-ordinated spending of public funds it is proposed that the Minister, in consultation, with Cabinet, is able to prescribe national spatial planning frameworks around particular programs and regions.
White Paper on development & promotion of tourism in South Africa (DEAT, 1996)	The White Paper on Tourism (DEAT, 1996) contains goals, principles and decision-making guidelines for tourism development in South Africa. Of particular relevance to //Khara Hais are the principles of: a) Harnessing the tourism industry to promote the quality of life of all South Africans, mitigating environmental problems and protecting the cultural heritage of the country. b) Mandatory use of IEM procedures, conducting on-going social and environmental audits and executing environmental management practices for all new tourism projects. c) Emphasising the diversity of the tourism product of South Africa. d) Private sector provision of tourism facilities and services at national parks and protected areas. e) Provision of infrastructure to improve the accessibility and unleash the tourism potential of rural areas, in a manner that minimises environmental impacts.

14.4 PROVINCIAL CONTEXT

The following acts are applicable regarding development in the Northern Cape Province, and especially in //Khara Hais:

14.4.1 NORTHERN CAPE PLANNING AND DEVELOPMENT ACT

The Northern Cape Planning and Development Act 7 of 1998 provides a single set of procedures and regulations to complement the accelerated development procedures as provided for in the Development Facilitation Act 67 of 1995. The primary objective of the Act is to ensure effective and co-operative planning and land development throughout the Northern Cape. Furthermore, the Act provides a set of principles which will guide the preparation and implementation of integrated land developmental plans, the management of rural and urban land and its development through land-use management mechanisms, subdivisions and matters incidental thereto.

The key principles of Act as it relates to //Khara Hais Municipality are as follows:

a) Policy, administrative practice and acts which influence land development, must allow the development of formal and informal residential areas, encourage the improvement of existing residential areas and allow new residential areas to develop.
b) Policy, administrative practice and acts which influence land development, must discourage illegal occupation of land, but must remember and acknowledge that the development of land does not always take place through the formal channels.
c) Policy, administrative practice and acts must encourage effective and integrated social, economic, institutional and physical land development.
d) Integrated land development must be encouraged so that rural and urban areas can support each other.
e) Encouragement to develop employment opportunities and housing in an integrated way.
f) Optimise the use of existing resources, such as those used for agriculture, minerals, infrastructure masses, roads, other traffic resources and social facilities.
g) Encourage a variety of land uses, even on individual erven and when land is subdivided.
h) Discourage the development of sprawling towns and cities, and to encourage these to remain more compact.
i) Contribute to the restoration of historically twisted spatial patterns of settlements and to make the optimal use of existing infrastructure.
j) Members of communities who are affected by land development (such as housing, agricultural development, etc.) must participate actively in the process of land development.
k) The skills and capacity of disadvantaged communities presently involved in land management must be built up.
l) Acts, procedures and administrative practices with regard to land development must be available, clear and understandable for those who are affected by them.
m) Encourage land development that is within the financial, administrative and institutional abilities of the country.
n) Encourage viable communities.
o) Encourage the sustained protection of the environment.
p) Fulfil the basic needs of all inhabitants in an affordable way.
q) Policy, administrative practice and acts must hasten land development.
r) Each proposed land development must be judged on its own merits and no type of land usage must be regarded as less important than another.
s) Land development must lead to guarantee or security of ownership.

14.4.2 OTHER ENABLING PROVINCIAL LEGISLATION AND POLICY

The table below summarises the provincial legislation and policy that collectively form the legislative framework for the preparation of the //Khara Hais SDF:

Table 21: Enabling provincial legislation and policy.

ACT, ORDINANCE, STRATEGY	PRIMARY FUNCTIONS
Northern Cape Nature and Environment Conservation Ordinance 19 of 1974	It was developed to consolidate and amend the laws relating to nature and environmental conservation, and to provide for matters incidental thereto. This Ordinance established the Department of Nature as well as an Environmental Conservation and Advisory Committee. It is also divided to cover nature reserves, miscellaneous conservation measures, protection of wild animals other than fish, protection of fish, protection of flora and professional hunters and contractors. Under Section 82 of the Ordinance, the Administrator has the power to effect provincial regulations.
The Northern Cape Tourism Act 5 of 1998	The objectives of the Northern Cape Tourism Act 5 of 1998 are to provide for the establishment of structures to develop, promote and market tourism and develop and operate tourist services in provincial reserves in the Northern Cape within the framework of government policy.

14.4.3 NORTHERN CAPE GROWTH AND DEVELOPMENT STRATEGY 2004 -2014

As a prerequisite for placing the Northern Cape Province on a sustained growth and development path, it is essential for all stakeholders to adopt a common vision to guide their actions as they jointly pursue a mutually agreed set of economic growth and social development objectives. This vision must also reflect government's commitment to the parallel objectives of job creation, sustainable service delivery, poverty alleviation and the eradication of historic disparities. For these objectives to be met and for the vision to be ultimately realised the Northern Cape Provincial Growth and Development Strategy and its related programs must be based on a set of principles that can guide decisions on the formulation, determination and implementation of all policies, legislation, development strategies and plans.

The process of development planning that gives rise to the Northern Cape Provincial Growth and Development Strategy and programs should be guided by the following principles:

a) Equality – notwithstanding the need to advance persons previously disadvantaged, development planning should ensure that all persons should be treated equally.
b) Efficiency – the promotion of the optimal utilisation of existing physical, human and financial resources.
c) Integration – the integration of spatially coherent regional and local economic development and improved service delivery systems.
d) Good Governance – the promotion of democratic, participatory, co-operative and accountable systems of governance and the efficient and effective administration of development institutions.
e) Sustainability – the promotion of economic and social development through the sustainable management and utilisation of natural resources and the maintenance of the productive value of the physical environment.
f) *Batho Pele* – the placement of people and their needs at the forefront of its concern and serve their physical, psychological, developmental, economic, social and cultural interests equitably.

The vision of the strategy is as follows:

"Building a prosperous, sustainable growing provincial economy to reduce poverty and improve social development."

By bringing about closer alignment of the planning efforts and resource allocation of all spheres of government, the strategy will provide the framework for:

(i) Establishing the link between planning and budgeting.
(ii) Determining that provincial and local government budgets are in line with jointly agreed strategic objectives.
(iii) Engaging with national government departments that share a co-responsibility for promoting economic growth and social development in the Northern Cape.
(iv) Local and district municipalities to derive their IDPs and LED strategies.
(v) Engaging with Development Finance Institutions such as the IDC, DBSA, PIC and Khula, who are in a position to deploy development finance in support of provincial economic growth and social development strategies.
(vi) Engaging with the parastatals such as ESKOM, TELKOM, MINTEK and CSIR who control resources and infrastructure essential for facilitating economic growth and social development.
(vii) Engaging with the private sector to create conditions conducive to the promotion of economic growth and social development through the deployment of private investment capital.
(viii) Developing and implementing strategies for Small, Medium and Micro Enterprise (SMME) Development and Black Economic Empowerment (BEE).

14.4.4 NORTHERN CAPE MANUFACTURING STRATEGY (2004)

This document has been compiled for the Provincial Department of Finance and Economic Affairs to better understand the dynamics of and strategic issues confronting the manufacturing industry of the Northern Cape. Three specific policy recommendations are made in this regard:

a) The establishment of a Manufacturing Development Centre for the province: The Centre will indicate to industry stakeholders the commitment of the province to manufacturing development. It would effectively link Northern Cape manufactures to national and other supply side support mechanisms, and facilitate of firm-knowledge of and access to existing and potential markets.
b) The development of a Northern Cape Manufacturing Cluster: It is recommended that the Cluster be constituted as an association not for gain and that it represent a true partnership between the provincial manufacturing sector and government with half the Executive responsible for running the Cluster nominated from industry and half from governmental bodies.
c) The provincial government should pressurise the DTI for further support of the manufacturing sector in the Northern Cape. The DTI have, *inter alia,* the following programs appropriate to the manufacturing sector in the Northern Cape: Sector Partnership Fund, Small Medium Enterprise Development Program, Black Business Supplier Development Program, Critical Infrastructure Fund, Foreign Investment Grant, Skills Support Program, Strategic Industrial Projects and Export Marketing Investment Assistance.

14.4.5 DEPARTMENT OF AGRICULTURE AND LAND REFORM STRATEGIC PLAN (2005-2010)

The launch of the Provincial Growth and Development Strategy for the Northern Cape offered the opportunity to more vigorously address the constraints facing the agricultural sector in the Province. The challenges for the next five years include:

a) An ever-increasing demand for services particularly from the emerging farmers and the game industry.
b) Provision of comprehensive agricultural support to beneficiaries of land reform and new entrants into farming.
c) Implementation of the Provincial Growth and Development objectives and strategies identified.
d) Implementation of Micro Agricultural Finance Scheme of South Africa.
e) High input costs in agricultural sector.
f) Drought conditions especially in the western region of the Province.

14.5 DISTRICT CONTEXT

14.5.1 SIYANDA DISTRICT MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The target of the Siyanda District Municipality Integrated Development Planning (2004) process emphasised the following priorities:

a) To develop a planning system that will promote community participation and encourage participation and partnerships between the government and communities.
b) To set up a framework in the Siyanda District Municipality whereby the local community, other role-players and interested parties will be given the opportunity to identify their own needs and issues as well as plan on how it can be implemented.
c) Set up space for a root-level approach that will gather and distribute information from provincial and international development strategies.
d) To set up a balanced framework for local economic growth and to address the local needs for development.
e) To establish a development planning system.
f) To develop a planning system which will link public expenses to development strategies.
g) The area management of the District Municipality and the local community will create goals and priorities.
h) To set up a system framework through which the Siyanda District Municipality will be kept responsible for the progress regarding goals and objectives.
i) To promote co-operation and co-ordination on national and provincial level between the Siyanda District Municipality and the government departments.

The following priority aspects have been listed for //Khara Hais Municipality in the Siyanda District Municipality IDP namely:

- Town planning.
- Roads.
- Storm water.
- Water networks.
- Sewerage networks.
- Electricity services.

- Parks and recreation.
- Protection services.
- Housing.
- Economic development.
- Social services.
- Tourism/appearance of the town.
- Health.
- Corporate services.

14.5.2 SIYANDA DISTRIT MUNICIPALITY ENVIRONMENTAL MANAGEMENT FRAMEWORK

The Department of Environmental Affairs and Tourism (DEAT), the Northern Cape Department of Tourism, Environment and Conservation and Siyanda District Municipality decided to jointly draft an Environmental Management Framework (EMF) for the Siyanda District Municipality to ensure that future development in the area occurs in a manner that is appropriate to the unique features and character of the area.

The purpose of the EMF (August 2007) is to integrate municipal and provincial decision-making and align different government mandates in a way that will put the area on a sustainable development path. The specific objectives of the EMF include:

a) The provision of strategic guidance in the EMF area.
b) Assisting in the identification of 'identified geographical areas' in terms of NEMA.
c) Assisting in the identification of 'specified activities within 'identified geographical areas' in terms of NEMA.
d) The provision of a decision support system.

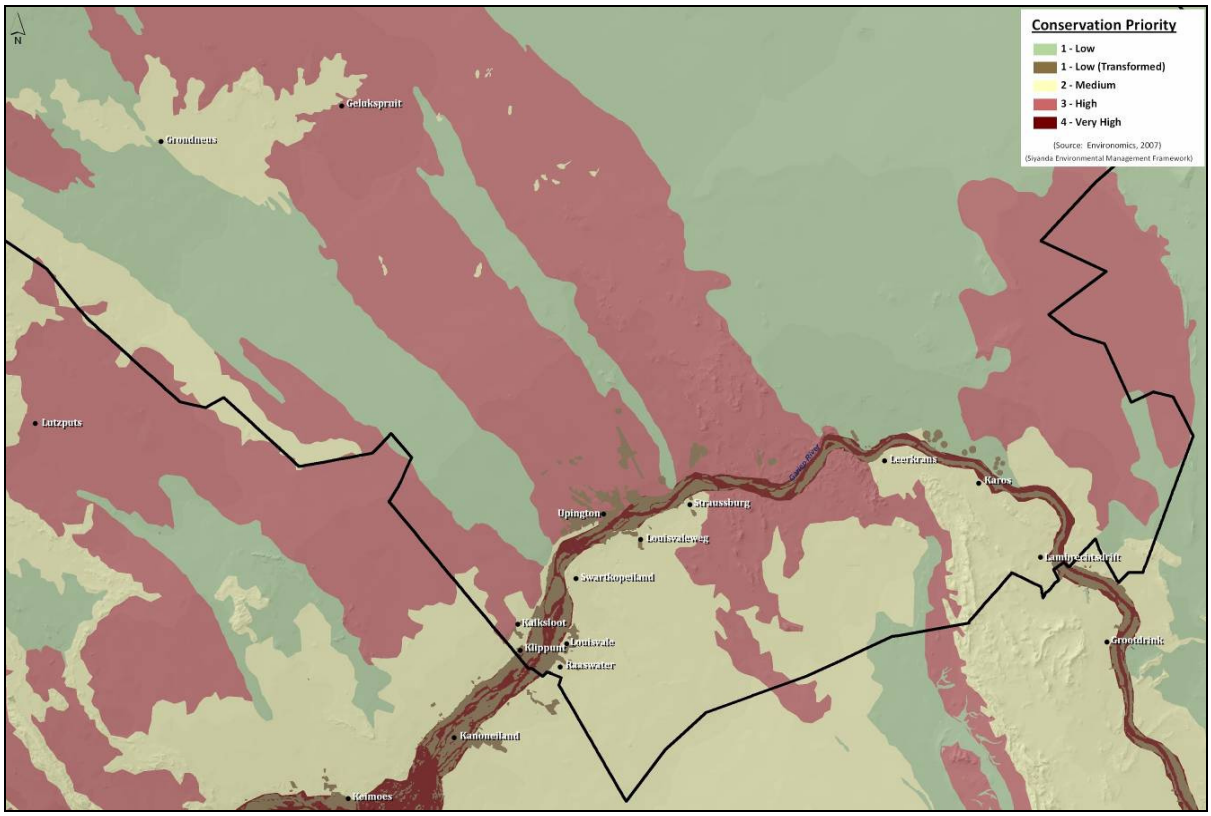


Figure 29: Vegetation Assessment: Conservation Priority identified in the Siyanda EMF (Source: Environomics, 2007)

14.6 LOCAL CONTEXT

14.6.1 //KHARA HAIS MUNICIPALITY INTEGRATED DEVELOPMENT PLAN

The //Khara Hais Integrated Development Plan 2007 – 2012 (May 2007) is a 'living' document. The IDP for 2003/2004 was reviewed and only information relevant to the planning process of 2005/2006 was documented in the 2005/2006 IDP. The current //Khara Hais IDP 2007 contains only the relevant information for the 2007 planning process. During the preparation of this SDF the IDPs for 2004, 2005, 2006 and 2007 were consulted.

According to the //Khara Hais IDP (2007) the municipal vision and mission statements are the following:

IDP VISION	To provide an affordable quality service to //Khara Hais and its visitors and to execute the policies.
IDP MISSION	As an authority that delivers municipal services to //Khara Hais, we attempt by means of a motivated staff, to develop //Khara Hais increasingly as a pleasant, safe and affordable living and workplace for its residents and a hospitable and relaxed visiting place for its visitors.

The purpose of the IDP for //Khara Hais is as follows (//Khara Hais IDP, 2005):

a) To create a framework within which the local community and other role players, i.e. the //Khara Hais, other Local Development forums and other interested parties and communities, identify their own development needs and plan how these will be given effect.
b) To establish a balanced framework for local economic growth and the addressing of local development needs.
c) To create space for the exchanging of information between the community and the local, provincial and national authorities and development strategies.
d) To develop a planning system that will promote community involvement and will encourage participation and partnership between the government and the community through implementation and land development objectives.
e) To develop a planning system that links public expenses to sustainable development strategies. Attainable aims and priorities will be established by //Khara Hais Municipality and the local community.
f) To create a planning system that links spatial and developmental planning.
g) To create a system framework through which //Khara Hais Municipality can be held responsible for progress in terms of aims and objectives.
h) To start a practical process of integrated development planning.
i) To promote co-operation and co-ordination between //Khara Hais and government departments on provincial and national levels.
j) To ensure the speedy execution of programs and projects that are related to the Reconstruction and Development Project (RDP).
k) To establish co-operation and co-ordination with neighbouring municipalities as well as the district Municipality.

SECTION F: VISION, GOALS, OBJECTIVES FOR PROMOTION OF SUSTAINABLE DEVELOPMENT

SECTION SYNOPSIS

In this section, the vision, goals and objectives for //Khara Hais Municipality are described and a summary is provided of how the concept of sustainable development is to be realised.

15 VISION, GOALS AND OBJECTIVES

The studies that have been undertaken during the preparation of this document confirmed the following:

a) //Khara Hais comprises unique natural, cultural, social and economic attributes that justify its status as a national asset.
b) The natural environment and its resources of the Municipality are sensitive and susceptible to over-exploitation or inappropriate use.
c) There is a substantial need for social upliftment and community development.
d) Priority subsequently should be given to issues such as;
   - sustainable use of public resources, such as vacant land;
   - rural development;
   - land reform;
   - social integration;
   - environmental conservation;
   - economic development;
   - expansion of the manufacturing sector; and
   - development of the proposed IDZ.
e) There is a general lack of co-ordination of development and land use on a bioregional level, which emphasises the need for an integrated planning framework, within which government, community, corporate, and other private interests, would share responsibility for co-ordinating land-use planning for both public and private land; and for defining and implementing development options that would ensure that human needs are met in a sustainable way.

In order to address the above aspects, a broad vision, goals and objectives have been formulated in collaboration with the communities and other key stakeholders consulted during the preparation of the SDF.

As described in Chapter 14, this SDF was prepared in context and in compliance with international agreements, protocols and obligations. Subsequently, in order to balance the socio-economic aspirations of //Khara Hais Municipality with the use of the natural environment and its community-supporting resources, the overriding mission of the IUCN[55] was adopted as a fundamental guideline in the preparation of this document, namely: *'The maintenance of essential ecological processes, the preservation of genetic diversity and the insurance of the sustainable utilisation of species and ecosystems that can only be achieved by the conservation of essential habitats and not individual species; and, the management of*

[55] International Union for Conservation of Nature.

human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations' (IUCN, 1980)[56].

Additional fundamental guidance for the preparation of the SDF was provided by the discussion document of the Department of Environmental Affairs and Tourism entitled '*Towards a New Environmental Policy for South Africa'* (1996). In particular, reference is made to the statement that *'in the process of transforming the South African society, the South African Government of national unity states as one of its priorities, that the government must ensure that all South African citizens, present and future, have the right to a decent quality of life through the sustainable use of resources. It also states that environmental considerations must be built into every decision and that current legislation should be revised with a view to establishing an effective system of environmental management in South Africa. The underlying principle of sustainable development is not only recognised as a priority by the South African Government, but also internationally in Agenda 21'.*

15.1 VISION FOR //KHARA HAIS

Based upon the above visionary statements, the following vision was formulated for //Khara Hais namely:

VISION

……a self-sustaining ecology with long-term benefit for all inhabitants of //Khara Hais….

15.2 PROMOTION OF SUSTAINABLE DEVELOPMENT – THE OVERARCHING GOAL OF THE SDF

As stated in the project brief, the primary aim of the SDF is to '**promote sustainable development in //Khara Hais**'.

Sustainable development is defined as *'development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs'* (WCED, 1987:8)[57].

The IISD[58] (1995) highlights two key components with regard to sustainable development, namely the concept of need (in particular, the essential needs of the poor to which overriding priority should be given, and the reality of limitations, imposed by the state of technology and social organisation), and the environment's ability to meet present and future needs.

In the *World Conservation Strategy*, sustainable development is considered to be a set of tools and strategies, which respond to five broad requirements, namely:

a) Integration of conservation with development.
b) Satisfaction of basic human needs.

[56] IUCN. 1980. *World conservation strategy: Living resource conservation for sustainable development.* IUCN, Gland, Switzerland.
[57] World Commission on Environment and Development (WCED) 1987: Brundtland Report ("Our Common Future").
[58] International Institute for Sustainable Development.

c) Achievement of equity and justice.
d) Provision of social self-determination and cultural diversity.
e) Maintenance of ecological integrity.

It is clear that sustainable development will not be achieved by only conserving natural areas. The *Global Biodiversity Strategy* (IUCN/UNEP/WWF) states that conservation strategies must be aimed at accommodating cultural, economic, and political circumstances at local and regional levels. Such strategies must, *inter alia*, be aimed at improving the well-being of local and regional communities through the implementation of conservation strategies.

The IISD (1995) points out that sustainable development occurs at the intersection of three global imperatives and that if these imperatives are not balanced, sustainable development cannot be achieved (refer to Figure 30).

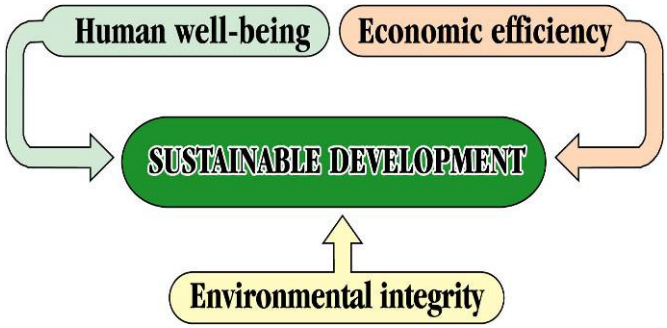


Figure 30: The three global imperatives for sustainable development.

The //Khara Hais SDF builds on the following understanding of the three global imperatives:

15.2.1 HUMAN WELL-BEING

Human well-being refers to both **material** and **spiritual well-being**. Material well-being refers to the absence of poverty. Spiritual well-being, in terms of the bioregional planning approach, implies that the bioregion represents a physical and moral space where its inhabitants seek to maintain and improve the continuity of its complex ecology. This, especially, entails creating the conditions for developing the individual to become richly connected to place and to obtain new powers, emotionally, intellectually and physically, so as to enable the individual, as a member of society, to play his or her rightful role in promoting and achieving sustainable development. It is recognised that, in post-apartheid South Africa, special consideration has to be given to address historical inequalities that have undermined human well-being in the past.

15.2.2 ENVIRONMENTAL INTEGRITY

Environmental integrity refers to the relative '*wholeness*' of the environment. 'Environment' is defined as the aggregate of all external conditions and influences affecting the life of an organism. In particular, 'environment' refers to the surroundings within which humans exist and that are made up of:

a) the land, water and atmosphere of the earth;
b) micro-organisms, plant and animal life;
c) any part or combination of (a) and (b) and the interrelationships among and between them; and
d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental integrity is determined by the *value* of the environment or place (natural or human-made), with specific reference to its intrinsic, systemic, and/or instrumental value. The SDF builds on the recognition that the human-made environment is located within and 'contained' by the natural environment. The manner in which human settlements are developed, therefore, has

an immense impact on the quality and integrity of the environment as a totality. It is therefore imperative that the human-made environment be planned, designed and developed in a manner that will ensure the maintenance of the values referred to above (i.e. intrinsic, systemic, and/or instrumental value).

From a natural environmental perspective, it is clear that ecological integrity is a key factor in the sustainable development equation. Ecological integrity *inter alia* requires that source and sink thresholds are not exceeded, that biodiversity is protected and essential ecological processes and services (e.g. water yield and quality, soil conservation, decomposition, etc.) are maintained.

15.2.3 ECONOMIC EFFICIENCY

Economic efficiency is understood as the optimisation of benefit at the lowest cost for valued things. Efficiency is the balancing criterion between human well-being and environmental integrity as it relates to a level of achievement in a particular performance in the one, to a loss in performance with the other. In terms of the definition and understanding of sustainable development and bioregional planning, efficiency is considered to take place within an economic system.

In view of the fact that efficiency balances the gains among different values, conflict often arises where the level of attainment of efficiency is in question. Efficiency, which balances the gains among different values, can therefore not be considered separately from justice, which balances the gains among persons. Whilst equity is most often considered as an ideal principle of just distribution of goods/benefits among persons, there are many stumbling blocks in society that make pure equity impossible to achieve.

15.3 SUSTAINABLE DEVELOPMENT OBJECTIVES

The application and implementation of the concept of sustainable development in the planning area need to be organised in accordance with set principles that will operationalise the vision and goals of //Khara Hais. These principles include the following:

15.3.1 SOCIAL SUSTAINABILITY

This objective refers to the concept of need referred to above and addresses the following:

a) Improve the quality of human life, including poverty elimination.
b) Recognise the extent of cultural diversity and respond accordingly.
c) Protect and promote human health through a healthy environment.
d) Implement skills training and capacity enhancement for historically disadvantaged people.

15.3.2 ECONOMIC SUSTAINABILITY

Effort must be made to achieve the following:

a) Ensure that new development promote qualitative urban integration, affordable housing and densification, in a financially viable manner, without undermining existing property values.

b) Ensure that as a whole, the for- and non-profit projects combine into a financially viable local economy that benefits all stakeholders, including shareholders, employees, the community, and partners.
c) Promote employment creation and, where practically possible, labour intensive construction.
d) Enhance competitiveness within the context of the promotion of policies and practices that advance environmental sustainability.
e) Invest some of the proceeds from the use of non-renewable resources in social and human-made capital, to maintain the capacity to meet the needs of future generations.
f) Protect and enhance the property and investments of all inhabitants.

15.3.3 BIOPHYSICAL SUSTAINABILITY

In //Khara Hais there will be the presumption in favour of conservation and a premium will be placed on the conservation of natural resources, wildlife and landscape. Materials for new development should, for example, be obtained from sustainable sources and in the design of buildings, the use of energy consumption will be minimised. In addition, the following principles will be incorporated into the planning and management of the development:

a) Minimise use of the four generic resources, namely energy, water, land and materials.
b) Maximise resource re-use and/or recycling.
c) Use renewable resources in preference to non-renewable resources.
d) Minimise air, land and water pollution.
e) Create a healthy, non-toxic environment.
f) Maintain and restore the Earth's vitality and ecological diversity.
g) Minimise damage to sensitive landscapes, including scenic, cultural, historical, and architectural aspects.

15.3.4 TECHNICAL SUSTAINABILITY

A primary aim of this SDF is to create a **qualitative** cultural environment, which is 'in harmony' with the natural environment that 'contains' it. The following objectives are set in this regard:

a) Construct durable, reliable and functional structures.
b) Pursue quality in creating the built environment.
c) Use serviceability to promote sustainable construction.

16 ROLE OF THE MUNICIPALITY IN PROMOTING SUSTAINABLE DEVELOPMENT

It is recognised that the Municipality plays a vital role in fostering sustainable development. The policies, programs and practices adopted and promoted by the Municipality are *inter alia* aimed at enhancing the efficient use of energy, water, sensitive habitats and other environmental resources. In addition, the sustainable development strategies of the Municipality aim to help local businesses reduce costs, generate new business opportunities, create jobs and increase economic competitiveness.

It is furthermore recognised that the Municipality can exert tremendous influence on whether its communities adopt more sustainable paths. This involves shifting public resources, services, investments, purchasing power and policies to encourage more economically and environmentally sustainable outcomes. In this regard, the Municipality should fulfil a dynamic and leading role.

Volume 3 describes the role and strategies of //Khara Hais Municipality as it relates to the promotion of sustainable development in its area of jurisdiction.

16.1 SUSTAINABLE DEVELOPMENT THEMES TO BE ADDRESSED

The SDF aims to help build and maintain **viable** communities within the broad framework of sustainability, which implies *'meeting the needs of the present, without compromising the ability of future generations to meet their needs'.* With regard to strategic proposals relating to sustainable development implementation, this document proposes the following themes and actions required at the level of the household, neighbourhood/community and the town/district.

Table 22: Themes as focus for discussion and actions required.

THEME 1: RESOURCE USE			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Ensuring that human needs are met while minimising the following: Non-renewable resource use. Unsustainable draw on renewable resources. Unsustainable use of global and local sinks for wastes.	Sustainable household; waste minimisation and resource conservation. Meeting needs for energy, materials and water while minimising resource use and separating recyclables.	Community-level recycling; what to do and how to do it. Reclamation and re-use and the direct use of wastes (e.g. composting, use of waste water). Urban agriculture as an already large source of resources and with great untapped potential (see below under livelihoods).	Waste minimisation and recycling within urban boundaries while also acquiring the resources that urban producers and consumers need. Regulations and incentives to promote sustainable resource use and minimise waste. Provisions for waste collection and management. Promoting improved thermal performance in existing and new buildings.
THEME 2: LIVELIHOODS			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Link employment creation (which contributes to a settlement's well-being) with poverty reduction and resource conservation.	Addressing housing and employment needs through self-help and mutual aid. Support for household enterprises through community-based credit schemes. Considering how housing schemes could better meet the needs of those who work from home (mostly women) for space and facilities for income-generating activities.	Improving or creating livelihoods for poorer groups in reclamation and recycling while also promoting resource conservation. Urban agriculture; producing food and livelihoods within urban areas. In many areas, urban agriculture is central to the livelihoods of poorer households.	Enhancing and utilising employment opportunities from sustainable development. Infrastructure and support for expanding the area's employment base and comparative advantage within a 'sustainable development' framework. Programs to support micro-enterprise development and training/retraining and research.
THEME 3: BASIC NEEDS AND URBAN POVERTY			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Provision of basic services to all.	Addressing particular needs of vulnerable groups. Includes understanding and	Using participatory tools and methods to develop community programs.	Implement community action and strategies to reduce basic needs and reduce poverty.

	acting the needs of disadvantaged children.	Identify poor and vulnerable groups and reduce their vulnerability to economic and environmental risks.	Ensure equity in access to urban resources and facilities.
THEME 4: FINANCE FOR SUSTAINABLE DEVELOPMENT			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Meeting human needs in settlements and promoting resource conservation.	Meeting household needs; forms, mortgages and cross-subsidies to maximise number of people able to afford adequate quality housing.	Mobilising community resources for low-income housing and neighbourhood development. This includes finance for community or neighbourhood level services and infrastructure (water, sanitation, health care, etc.). Support for innovative community actions to meet needs and reduce waste/ resource consumption.	Financing sustainable development. Meeting needs of communities while promoting resource conservation and waste reduction. Broadening of tax base and enhancing authority's revenue base. Implementing an equitable system in terms of which resources are transferred from richer to poorer areas.
THEME 5: GOVERNANCE & PARTNERSHIPS			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Ensuring competent, effective and representative local government working in partnership with stakeholder groups, business.	Defining and protecting human rights. Encourage debate at household and neighbourhood level about community rights, who has control over resources, effective participation.	Implementing and sustaining community and neighbourhood action programs and ensuring participation and accountability. Provide an urban and rural framework to support and encourage the initiatives of households, communities, NGOs and enterprises while setting limits on resource use and waste generation and ensuring public health and safety.	Governance for sustainable development in urban and rural areas. Regulations and incentives for promoting achievement development goals.
THEME 6: ENVIRONMENT & HEALTH			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Meeting citizen's health needs and ensuring a healthy environment.	Minimising potential negative health impact of urban environments on households. Provision of basic services to all, especially poor people.	Providing adequate water, sanitation and drainage provision within low-income communities. Providing health care and emergency services.	Implement strategy for a healthy urban area & for enhancing economic growth – and for enhancing occupational and environmental health. Integrating health and environmental goals in the collection and management of solid wastes.

THEME 7: TRANSPORT AND COMMUNICATION			
DESCRIPTION	**PROPOSED ACTIONS**		
	HOUSEHOLD	**NEIGHBOURHOOD/ COMMUNITY**	**TOWN/SETTLEMENT**
Maximising access to urban services and amenities. Minimising use of fossil fuel and other non-renewable resources.	Meeting transport needs for households and communities. Determining human needs and priorities and ensuring that they can obtain the required goods and services at the lowest environmental cost.	Meeting transport needs for households and communities. Minimising transport requirements (especially by private car) and development that encourages high transport input, e.g. bringing employment opportunities close to public transport nodes and residential areas. Encouraging non-motorised transport to the extent possible.	Meeting transport needs and environmental goals. Seeking balance between free-flow of traffic, citizen access and minimum use of private cars. Promoting fuel-efficient, movement-minimising throughout Municipality.

SECTION G: CONTEXT AND USE OF THIS VOLUME

This volume should be read together with Volume 2 and Volume 3 and their appendices. As stated in Chapter 1, the key aspects that emerged from the *Environmental Scan and Analysis* described in Section B of this document, the stakeholder consultation undertaken as part of the SDF planning process, and the //Khara Hais IDP were addressed in Volume 2 and Volume 3.

As stated in Chapter 1, the identified key aspects were divided into the two distinct groups referred to below and were addressed as follows:

1. **Aspects with Spatial Implications**: Most of these were addressed in **Volume 2** in the form of plans and related guidelines that are to guide the future development of //Khara Hais.

2. **Aspects with No Spatial Implications**: These are aspects that will not have spatial implications but that could have an impact on sustainable development. They were addressed in **Volume 3** in the form of strategies, programs and projects to be undertaken in terms of dedicated principles, guidelines and criteria that comply with the requirement for sustainable development listed in Chapters 15 and 16 of this volume.

DENNIS MOSS PARTNERSHIP
STELLENBOSCH